

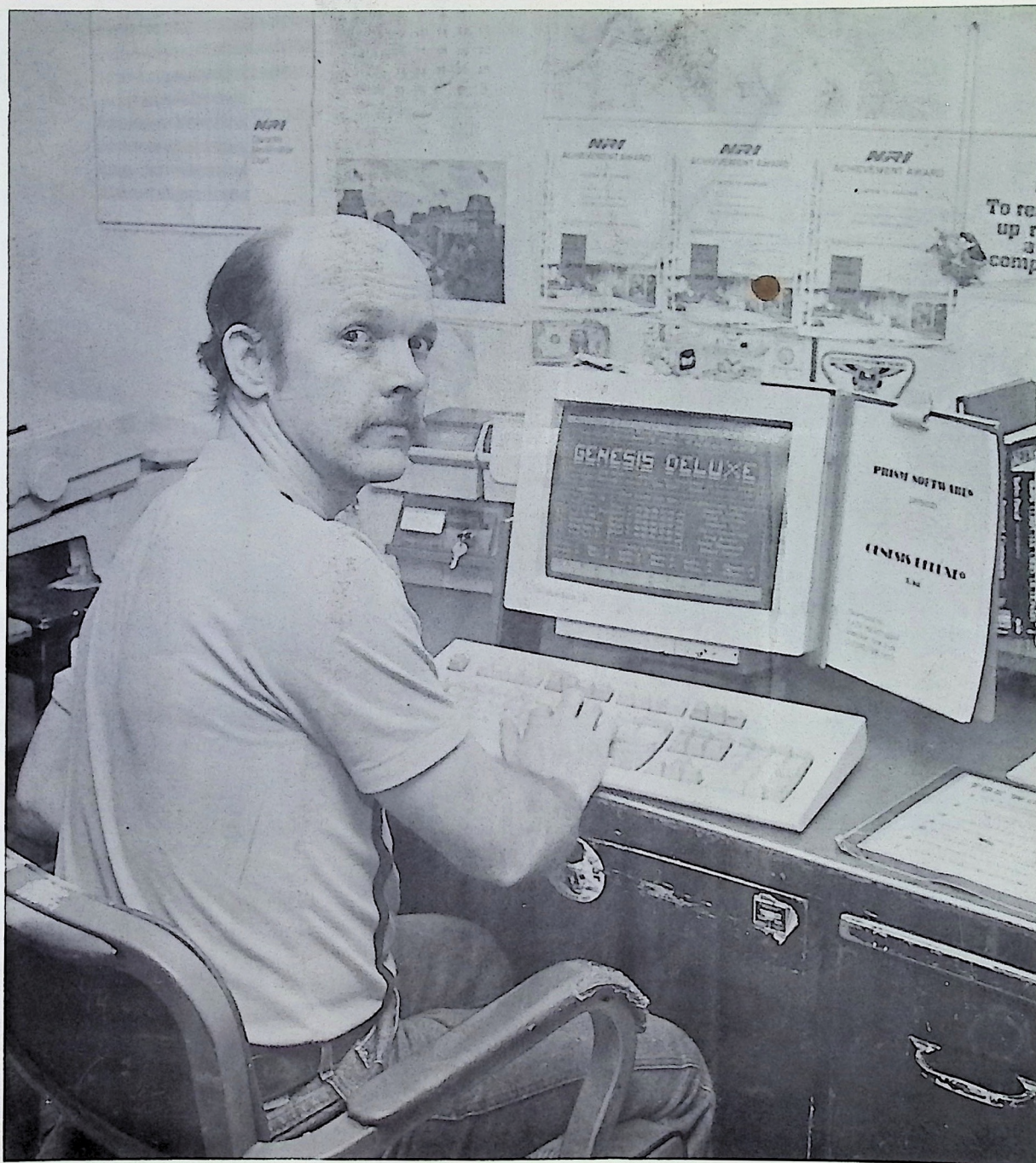
December, 1990

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BOARDWATCH

MAGAZINE

Electronic BBS and Online Information Services



Carter Downer and GENESIS Deluxe BBS- Reborn in the World of Bulletin Boards

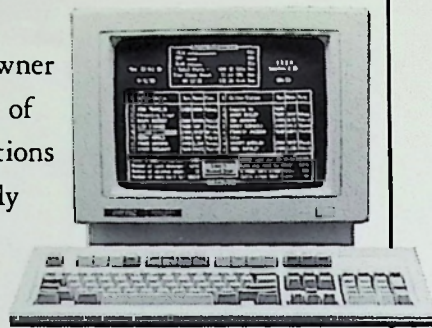


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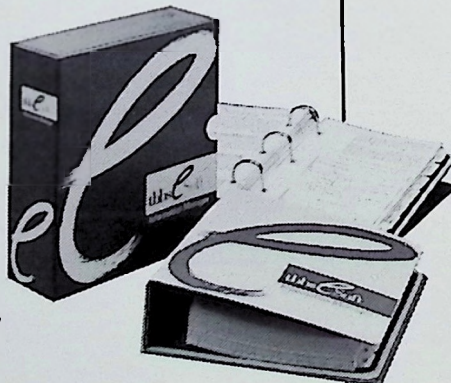
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Address _____

City _____ State _____ Zip _____

Telephone (____) _____

Company (optional) _____

Name you will use for Logon to BBS (required)

First _____ Last _____

Password _____

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EDITOR'S NOTES

When we started Boardwatch in March of 1987, there was no way of foretelling the following it would develop. For whatever reason, we seem to have hit a nerve in the online community. Despite all efforts to declare its existence a secret, we're now available in over 500 retail stores nationwide and with virtually no direct mail effort so far, subscriptions continue to come in at a sometimes frightening pace. We're struggling to maintain the level of reader service I insist we provide. Someone must have leaked the news. Again, we ask all readers to keep Boardwatch's existence "just between us." I sincerely enjoy working from my home in the scenic Rocky Mountain foothills to the South and West of Denver. We don't aspire to become one of the "big magazines". What we do best is act as observer and cheerleader for the most creative group of people of our time, the online infopreneur. They're doing some fascinating things with BBS technology, and it's our privilege to follow their progress.

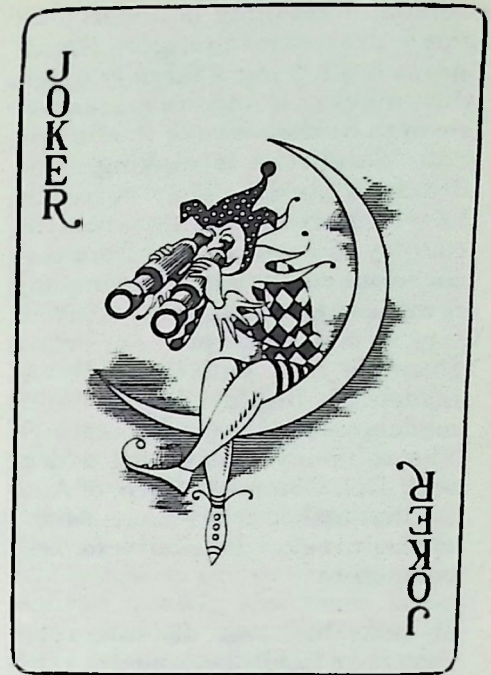
With this issue, Alan Applegate joins us with a regular monthly column. Mr. Applegate's mission, and he's decided to accept it Jim, is to de-mystify some of the technical elements of online communications. We're prone to bandy about a host of terms common to modem technology, CCITT standards, MNP, etc. that can be a bit overwhelming to those just starting out. Last issue we pretty much blasted software vendors, modem manufacturers, and commercial online services for unnecessarily complicating life for new callers. Actually, a little of the blame can be shared a bit closer to home. While we can't reduce Boardwatch to the "Gee Whiz - it made a noise" level, we think Applegate's column can provide some lucid explanation of terms helpful to all. He's also offered to help us scan the horizon for the best and most interesting online services, and his

article on the BYTE Information Exchange (BIX) is a welcome addition.

Bob Hartman is one of the authors of the BinkleyTerm mail program - a freely distributed program to pass mail and files between bulletin boards participating in the international Fido Net. About a year ago, FidoNet faced one of its few legitimate crises regarding mail standards. While political battles are commonplace, the one absolute must in unifying such a network is common software standards for communication. A political battle between software authors threatened to fragment the one trait uniting FidoNet systems - the ability to pass mail and files between systems. Hartman was directly involved in the compromise that averted a technical disaster within the network. In this issue, he offers an insider's view as to what happened and why. Bob proves emphatically that programmer's can spell and we hope to twist his arm a little in the future for more articles on the technical end of getting PCs to do their mating dance by telephone.

In this month's city focus section we examine Washington DC's online community and list a representative sampling of the many fascinating systems in operation there. There are a number of government operated information services operating in that area that we hope you find as intriguing as we do. We also introduce with this issue an infant BBS list we intend to grow larger - the Boardwatch List of Lists. All BBS listed in this nanolist actively maintain extensive lists of BBS in their area. By dialing one of these systems in your area, you can gain further access to hundreds of BBS accurately maintained on these lists.

The arena of BBS software is on the verge of explosion. We're seeing a number of new entries and major upgrades to existing products and we'll be covering this somewhat more ardently over the next few issues. In this issue we look at a major upgrade to Mustang



Software's Wildcat! product and new life for the Genesis Deluxe package.

Genesis Deluxe particularly strikes a favored note at Boardwatch. Individuals suffering from various physical handicaps are finding new hope and worthwhile activity in the online world - a story we're hearing repeatedly. Carter Downer's trek back from his setback is inspiring, and again and again we're finding people who have been saved from isolation, depression, and despair by discovering a new world of people, an ongoing economy, and worthwhile work for them to do in the world online.

Stay Connected;

Jack Rickard, Editor

TELEBITS

RUMORS, MIGHT BES, NUMBERS CAUGHT IN PASSING

Intel Corporation plans on releasing a 50MHz version of the 80486 microprocessor chip in 1991.

Computer retailing is undergoing some dramatic changes. Small stores are having a terribly tough time making it and supermarkets seem to be the wave of the future. Soft Warehouse is making some dramatic strides. They currently have 13 stores operating across the country to rave reviews from cost conscious customers. The company provides a stunning array of inventory at mail order prices or below. Example: track balls - six different models on display. Laptops - 18 models on display (and operating). The company just struck a deal with Dell Computer Corp. of Austin that makes Soft Warehouse the exclusive retail distributor for Dell computers.

It looks like long distance rates may have finally bottomed out - for now at least. American Telephone and Telegraph has announced a 2.2% increase for calls made on nights and weekends. MCI and Sprint spokesmen have noted they will likely follow the lead of AT&T. Interestingly, the increase does NOT apply to participants in AT&T's Reach Out America plan - only to casual users of long distance service. The new rate works out to about three-tenths of a cent per minute and will go into effect November 2.

The *Wall Street Journal* has a new audiotext service you can dial for trading and market news at 1-900-JOURNAL. Enter 9999 for a list of categories such as 1800 for commodity futures, 2100 for metals futures, or 2200 for petroleum futures. You can also check individual stock prices using a coded chart that allows you convert stock ticker symbols to numerics. The call costs 85 cents the first minute and 75 cents for additional minutes. You can also call customer assistance at 800-345-NEWS.

Dateline Jerusalem provides news broadcasts from The Voice of Jerusalem and the Israeli Army Radio along with daily updates of events in Jerusalem at (900)568-NEWS.

Will this babe never quit? Jessica Hahn, the woman who brought down Jim Bakkers evangelical telephone/TV ministry and eventually sent Bakker to jail, apparently has reached a new low on cashing in. Since the television/radio circuit has now grown cold on her, she must be looking for new fields. Dial 900-230-5050 to hear old interviews with reporters with Hahn.

How about the **Three Stooges Hotline**? Dial it at (900)860-9900. Wanting to know the value of your clunker? Dial 900-999-CARS and enter your mileage by touch tone phone keypad along with model, year, and state. The program calculates the value of your car in the used market, factoring in actual mileage.

Apple Computer now offers a toll-free Customer Assistance Center telephone support line at (800)776-2333. Our question: you mean they were charging that kind of price for those computers and NOT providing toll-free technical support? Answer: And they STILL aren't. If you call the number for support, they refer you to a local dealer in your area.

LAPTOP RUNS BOTH MAC AND IBM SOFTWARE

A tiny California company may point the way to the desktop computer of the future. A number of firms have begun developing systems based on the Sun Microsystems Inc. SPARC reduced instruction set microprocessor, the heart of Sun's current line of engineering workstations. But RDI, Inc. of San Diego may be paving a pathway to a new type of machine with a laptop they call the BriteLite. BriteLite is a SPARC clone that will run Apple Macintosh software faster than an Apple Macintosh SE, and MS-DOS software at about the speed of a 12MHz 80286. It also runs software for the Sun workstation.

The laptop includes 8 MB of RAM and a 100 MB hard drive with a 13-inch screen and will be priced between \$7000 and \$12000. TriG-

em Computer Inc. of Korea will actually manufacture the machines for RDI. They also make PCs for Epson Corporation. RDI plans to show their new machine at the fall COMDEX in Las Vegas. No word on availability. RDI, Inc., San Diego, CA; (619)558-6985.

AT&T TOLL FREE DIRECTORY DIALER

General Information's **HOTLINE** software program has become extremely popular. It allows modem owners to auto dial telephone numbers from a database for voice calls. You can instantly look up telephone numbers from your directory, point and shoot, and it dials the telephone. Simply pickup the receiver and start talking. The package gained acceptance by including a 10,000 number directory of business telephones.

The company has recently released an even more useful version titled **HOTLINE TOLL-FREE 800**. It includes a database containing 117,000 toll-free numbers from AT&T's **TOLL-FREE 800 DIRECTORY**. This book is becoming quite popular at \$14.95. For only \$59.95, you can have it in data format with the Hotline dialer and personal telephone directory manager as well. Note that the full 800 directory does take up 16 MB of hard disk real estate. But it's easy to use and searches are quite fast. The program is a Terminate and Stay Resident (TSR) popup but it can make use of Expanded Memory (EMS) to use as little as 3K out of DOS RAM.

The program has several other little touches that are nice. A popup notepad lets you make notes while on the telephone that are stored in the database with the telephone number. It can import dBASE databases, and it will print mailing labels out of the database as well. General Information Inc., 11715 North Creek Parkway South, Suite 106, Bothell, WA 98011; (800)882-3900.

CD-ROM WHITE PAGES DIRECTORY

PhoneDisc USA is offering over 90 million residential address listings - most with telephone numbers - on two CD-ROMs. The product actually consists of separate Eastern Residential and Western Residential editions. Either disc is available at \$995 or both for \$1895. The product comes with PhoneDisc search software. From reading their license agreement and contract, we must conclude that this product is not suitable for any purpose known to man. Once you have subscribed and they have your \$2000, you are specifically prohibited from using it for almost any purpose. If nothing else, it provides an example of one of the oddest marketing techniques we've seen anywhere. PhoneDisc USA Corporation, 20 Edenville Road, Warwick, NY 10990; (914)986-2649.

MODEM DEALS FOR BBS OPERATORS

One significant item in the budget of aspiring BBS operators is of course the modem. For multiline operations, this can become particularly fiscally gruesome. If you find \$1000 for a premium high-speed modem a bit breathtaking, consider throwing eight of them up for a medium sized multiline service.

The good news is that modems are getting cheaper. Despite the commodity dynamics of the modem market, we're seeing increasing numbers of players. The current hot area is in modems supporting both CCITT V.32 and V.42bis standards. V.32 is essentially full-duplex (two way) 9600 bit per second (bps) transmission. V.42bis is an error correction/compression standard that reduces line noise and increases throughput by as much as 4:1 under some specific conditions. It is possible to transfer an uncompressed text file with one of these modems at speeds approaching 38,400 bps. This is basically a full typewritten page per second.

The problem with V.32 in the past has been expense. Two to three years ago, V.32 modems were selling in the \$2500 to \$3500 range. A year ago, they were appearing at \$1100-\$1500. Within the past few months we've seen introductions in the \$700-\$900 range. After next weeks COMDEX in Las Vegas, we would expect to see several sub-\$500 entries. The only dark spot on this increasing speed/decreasing price confluence is complexity. Today's V.32 modems are discouragingly complex to setup to run properly. With the simpler modems of just a year or so ago, if you improperly initialized a modem, it didn't work. If you entered the proper "magic words", it did. Today, it is very common to get everything working, "more or less", and yet continue to have frustrating intermittent problems when making certain connections to other modems. With 30 to 50 (or more) settings and registers to alter operation, the possible combinations you can try would indicate that those monkeys WILL type up a Bible before you get your modem working flawlessly.

For BBS operators, there is even more of a break on price. A widening number of leading modem manufacturers give BBS operators a significant break on price. With roughly 15,000 to 20,000 BBS in operation in the U.S. alone, this would not seem at first glance a cunning marketing move. But if you dig a little deeper, the attraction becomes obvious.

The concept was actually pioneered by U.S. Robotics Corporation and we think we could make a case that it turned the company around. U.S. Robotics was founded by five graduates of the University of Chicago who got together in 1976 to form a high technology company. The name U.S. Robotics was a direct lift from Isaac Asimov's science fiction novel *I Robot*. In the story, a company named U.S. Robotics developed robots with the positronic brain and grew to become the largest company in the world.

In the early 1980s, USR became quite successful with a modem they developed that both Apple and Commodore picked up as a house brand. When both companies eventually dropped them, USR's fortunes were a bit on the wane. Their passport modem was not considered competitive at the time. Hayes modems were the king. In 1984 the company introduced the Courier 2400 bps modem to a market primarily driven by Hayes 1200 models. The Courier was very precisely compatible with the Hayes 1200 but operated at a top speed of 2400 bps. Hayes, meanwhile, had introduced a 2400 bps modem with some serious technical problems. They recovered quickly, but there were some glaring compatibility issues between their own 1200 and 2400 bps models. The USR Courier 2400 was actually more Hayes compatible than the Hayes, but they were saddled with a lingering image problem.

A few of the gents at USR had been active in the hobby BBS community. USR, in fact, ran an early FidoNet BBS. These activists proposed to sell modems to electronic bulletin board operators at a discount. In July, 1984, the USR Courier 2400 was introduced at a retail price of \$699. But USR quietly informed the international FidoNet that system operators could purchase the modems at \$320 - at that time, slightly undercutting Hayes's 1200 bps price. The response from the cost-conscious sysop community was understandably strong.

In 1986, several modem manufacturers developed 9600 bps modems that avoided the rigors and expense of the echo canceling technology mandated by the CCITT V.32 standard. Probably the best of these was the Telebit Packetized Ensemble Protocol (PEP) that could transfer files at up to 18,000 bps and automatically adjusted to poor line conditions. USR also had an entry they called HST for High Speed Technology. Like the Telebit PEP, the technology was quite proprietary and only worked when connected with other USR HST

modems. And Hayes entered their V-Series modems for the same purpose.

At that time, both Hayes and Telebit responded to the hobby BBS community like the only two women on a seagoing Greek freighter. BBS was essentially a dirty word. USR, having seen good progress from their Courier 2400 sysop program, broadened it to include the HST. The theory was that if a significant percentage of BBS systems would adopt the HST, their callers would naturally follow. The concept proved enormously successful.

Another element involved the nature of BBS system operators themselves, which the other modem manufacturers didn't seem to understand very well. BBS system operators ran BBS at that time strictly as a hobby in the evenings. Most held technical jobs at corporations across the country by day. As companies began increasingly adopting PC communications, the natural choice was the Hayes models because everyone recognized the name. But that certainty began to erode as more BBS operators working within these companies continued to point out the strong features and comparatively modest price of the USR models.

Today, the USR models enjoy enormous popularity. Roughly a third of the 15,000 to 20,000 BBS operating in the US provide 9600 bps access. And an unreasonably high percentage of those systems choose USR - primarily due to the sysop discount program. Our review of Chicago, USR's backyard, indicates that over 95% of all systems supporting 9600 bps connections use US Robotics modems to do so. Our review of Washington D.C. this month indicates 63% of the 9600 bps BBS systems in operation there use the U.S. Robotics models. Assuming the conservative 15,000 BBS figure and a further conservative 75% average market penetration, USR has over 3700 BBS sites using one or more U.S. Robotics 9600 bps or faster modems - some featuring as many as 32 lines. The

result for callers is that if you want to connect to BBS systems at 9600 bps, you're pretty much forced to buy a U.S. Robotics modem. Further, commercial online services have not embraced 9600 bps technology nearly as quickly as BBS systems. So for other than strictly point-to-point company file transfers, the modem to have would seem to be the USR HST. And that is due in very large measure to their sysop discount program.

U.S. Robotics continues their sysop discount program today. Their top of the line U.S. Robotics HST Dual Standard continues the HST technology while also providing CCITT V.32 standard connections to other manufacturers modems at 9600 bps. It also features CCITT V.42bis for error correction and compression. The Dual Standard lists for \$1295 but system operators can buy in for \$699 per unit. And their Courier V.32 model, listing for \$995, is available to system operators at \$479. USR operates an excellent product support BBS using TBBS multiline BBS software at (708)982-5092 where system operators can actually order a modem under the program online. U.S. Robotics, Inc., 8100 N. McCormick Blvd., Skokie, IL 60076; (800)982-5151.

At this point, other modem manufacturers, who somewhat haughtily dismissed the BBS market early on, are scrambling to get in on the act. Hayes Microcomputer Products announced a program over a year ago. Currently, they offer their \$1195 Hayes Ultra 9600 bps modem, a CCITT V.32 unit also featuring V.42bis error correction/compression to qualifying system operators at a very attractive \$599. Hayes also operates a beautiful multiline support system using eSoft's TBBS software at (800)874-2937 [800-USHAYES]. Interested system operators can contact Hayes at Hayes Microcomputer Products Inc., ATTN: Hayes SYSOP Coordinator, P.O. Box 105203, Atlanta, GA 30348; (404)441-1617 voice; (404)449-0087 fax.

Intel Corporation is widely known for making the microprocessor chips we all use. But actually, they also manufacture a line of modems and fax cards that have made a very good impression on the online world. This past October, they introduced a particularly exciting entry into the modem wars. The 9600EX modem also features CCITT V.32 9600 bps capability and the V.42bis compression/error correction standard in a very attractive package at a list price of \$799. They've also just introduced a sysop discount program making the modem available for \$399 - a 50% discount. And they operate an online support BBS using TBBS software at (503)645-6275. You can download a sysop order form and questionnaire there and fax it to (301)224-8023 or mail it to Intel Sysop Special Offer, P.O. Box 6680, Annapolis, MD 21401. Most sysop discount programs require payment in advance or cash COD. But Intel allows you to charge a modem to your Master Card or Visa as well.

And the floor price for V.32 modems hasn't really been found. Practical Peripheral, long noted for low cost modems, has introduced a CCITT V.32/V.42bis modem at an even lower retail price of just \$699. In addition to providing the V.32/V.42bis capability, the Practical Modem 9600SA model is quite stylish in a vertical case with large front panel power buttons and vertically arrayed indicator lights. The unit carries a five year warranty, nothing to sneeze at when you're running the heavy use of a BBS. And they are discounting the modem to BBS system operators at an incredible \$339 each. They operate a somewhat limited support BBS using Opus software on a single line at (818)706-2467. At press time, the company was just putting together their sysop package and ordering details weren't yet firmed up. But the modem is shipping. We've seen it advertised at a street price of \$495 through Fry's Electronics. You can reach the company at Practical Peripherals, 31245 La Baya Drive, West Lake Village, CA

91362; (800)442-4774 voice; (818)706-0333 headquarters; and (818)706-2474 fax.

Most of the above companies also provide similar discounts on their lower cost 2400 bps modems. A couple of manufacturers we encountered offer only 2400 bps modems at this point. Sharp Digital Information Products is offering a 2400bps MNP modem, their model 9624e at a list price of \$399 and a sysop discount to \$199 per unit. It does have a proprietary Extended Baud Rate feature they claim will do 4800 bps file transfers but only with other Sharp modems. They operate a Wildcat! support BBS at (714)261-6610. Sharp Digital Information Products, Inc., 16841 Armstrong Ave., Irvine, CA 92714; (800)562-7427 voice.

One of the most intriguing offers for the real bargain basement hounds is by a relatively unknown company called CompuComm. They offer a 2400bps MNP 5 modem with Fax for \$279. Additionally, the product offers a 9600 bps half-duplex connection. It is proprietary and it does not support CCITT V.32 - a very serious drawback. It's also only available in an internal circuit card configuration, although according to CompuComm president James Freeman, they should have an external model ready very soon. The intriguing thing about this modem is that it does provide a true 9600 bps connection at a bargain basement price. And they discount the thing to system operators for an incredible \$169 per unit. They also provide a 5-year warranty. CompuComm, 1186-J Miraloma Way, Sunnyvale, CA 94086; (800)228-6648 voice, (408)732-4570 fax

Almost all the sysop offers come with some strings attached. These vary from manufacturer to manufacturer and they've even been subject to change from time to time within a company. Generally, they want you to have operated a BBS for six months or so, and they want you to use the modems purchased on your BBS for the next six months or a year. You must provide them a logon account with pass-

word so they can verify the existence of your BBS. And almost all of them require that you put some form of message on your logon greeting noting that you support connections to their modems. With a few exceptions, most all want a cash deal. You either send a check or Money Order and wait for it to clear or they send it to you UPS COD cash delivery. None of this is particularly onerous. But you may not get your modem right away. Despite the crowded throngs of vendors entering the modem market, virtually ALL of them are having difficulties meeting demand. Apparently, the V.32 modem market is heating up VERY quickly. Most of these modem manufacturers accomplish V.32 using a small circuit board made by Rockwell. Apparently, Rockwell can't make them quick enough and most of these modem manufacturers are on a limited allotment. And the online market is growing dramatically. So often, the vendor is faced with shipping a finished modem either to a system operator at near their cost, or to a paying customer at full price.

There is also a temptation to compare modems strictly by what standards are supported. This is a bit dangerous. Not all V.32/V.42bis modems are created equal. The resistance a modem has to line noise, reliability, and how easy it will be to get in operation with your BBS software are all considerable factors. We've actually run into modems that don't work at all with particular software packages for various reasons. It's best to talk with a system operator that already uses your particular BBS software package and the modem you are considering.

In any event, savvy system operators can move to V.32 at much lower prices than just a few months previously. Further, the generic V.32/V.42bis combination seems to be the wave of the future.

MODEM VENDORS

Vendor	Support BBS
ATI	(416)756-4591
Hayes	(800)874-2937
Intel PCEO	(503)645-6275
Practical Peripherals	(818)706-2467
Sharp	(714)261-6610
U.S. Robotics	(708)982-5092

While U.S. Robotics has had a hammerlock on the BBS market for years, the choice of brand appears to be becoming less important each day. The introduction of 14,400 bps V.32bis modems next spring will likely hasten the demise of such brand loyalty. But recall that modems are also becoming more complex. Divining the magic word to get your particular modem to work with your selected BBS software can sometimes be a substantial task. Before purchasing a modem, it might be prudent to check with your BBS software vendor to see if they have worked out the initialization string for that modem, or conversely check with the modem manufacturer to see if they are willing and able to help get your BBS software and new modem successfully married. We have run into a few instances where a particular modem brand just can't be made to work with some BBS software.

There is also a temptation to compare modems strictly by what standards are supported. This is a bit dangerous. Not all V.32/V.42bis modems are created equal. The resistance a modem has to line noise, reliability, and how easy it will be to get in operation with your BBS software are all considerable factors.

NEW WILDCAT! VERSION 3.0 DUE

Choosing a multi-line BBS software package can be a frustrating task. This may be due to the fact that the industry is young, the variety of different developers are each headed by men of strong vision, just generally not the same

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vision. How BBS technology fits into our personal, entertainment, and professional lives is not yet fully defined. As a result, thousands of talented people are groping for the perfect paradigm for managing information and communications among large numbers of people scattered over a wide geographic area - the basis of PC communications and BBS technology.

For most serious applications, the restrictions of single-line BBS packages for the most part relegate them to shareware hobby BBS roles. Even if you only need a single line now, the difficulties in translating your user log and message base to a different type of software indicate that you should shop for a package that is either multiline and you simply use it on a single port initially, or one that offers a clearly defined upgrade path with minimum installation problems when upgrading.

Currently, under the standard DOS configuration popular, familiar, and least expensive for the ma-

jority of applications, there are two basic paradigms for multi-line operation. Single CPU systems with built in multitaskers offer very efficient, very cost effective installations by using serial breakout cards to handle multiple telephone lines from a single machine. Hardware, maintenance, and house-keeping on such systems tend to be very low overhead and a number of packages offer superb performance. The Bread Board System from eSoft Inc., The Major BBS from Galacticom, DLX from On-line Store, and Oracomm from Surf Computing all fall into this category.

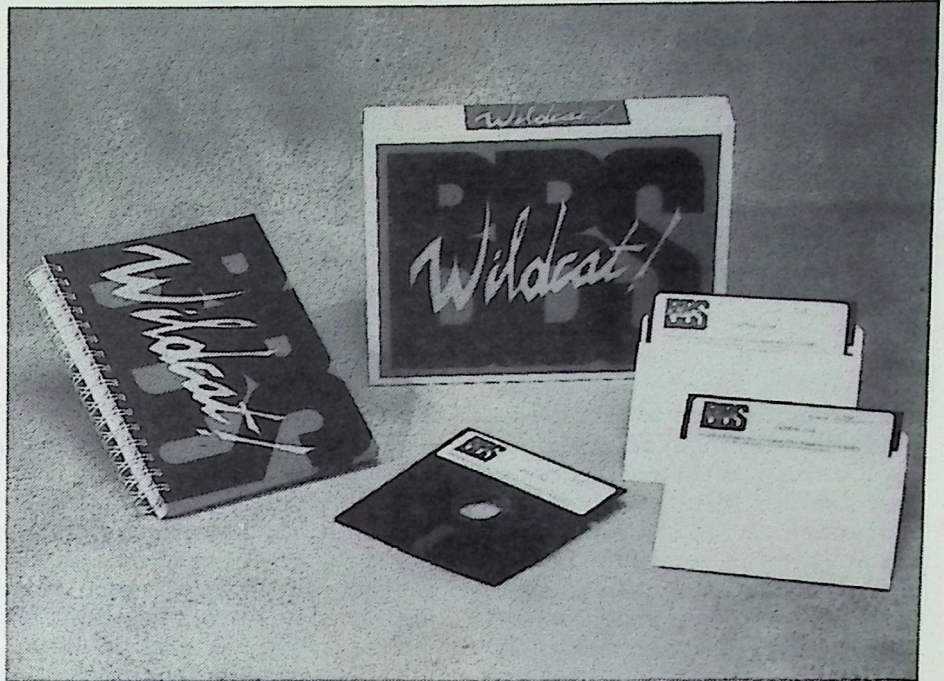
The disadvantage of single CPU multi-line systems is that because of their multitaskers, they do NOT do well in running external DOS programs. Most don't let you run them at all, and a few allow you to run specially written programs within certain operating constraints.

The second form of multiline BBS we refer to as LANables. In this scenario, you usually run multiple lines off a Local Area Network such as Novell or LANtastic. The basic installation usually involves a server machine with a large hard drive, and a number of workstations LANned to the server. These workstations may be single floppy machines with no hard drive at all. Each workstation manages a single modem/telephone line via a standard serial port. The user log, message bases, and file directories are all commonly available to all the workstations and so to all incoming lines. Although the hardware and network cost and complexity can be substantial, these systems offer much more flexibility because each workstation is essentially acting as a single task PC. As a result, incoming callers can technically be allowed to run ANY DOS application that can fit within memory and whose screen output can be redirected through the serial port.

Systems using this paradigm include PCBoard, probably the most widely used, Genesis, a new product described elsewhere in this issue, and Wildcat!. Public dial-up systems using these products across the country enjoy an incredible array of "door" programs written by third party authors to perform almost any task. Message packers, off line readers, text display packages, games, gambling, and an assortment of other applications are designed specifically with the system operator in mind.

Mustang Software has marketed a program titled Wildcat! for a number of years now. Originally a single line shareware product, for the past two years it has been offered as a commercial program under the LANable paradigm. It's currently even available through B.Dalton's Software Etc. subsidiary in 240 retail mall locations across the country. As the product has developed, it has become progressively more LAN capable. Since this type of software requires a LAN to operate, most people think of the LAN as a requirement to run the BBS. But what if you turn this thinking around a bit. Instead of picturing an organization running a LAN to support a BBS, how about organizations that already run a LAN, and would like to add BBS capabilities?

Many small businesses and offices run on an internal LAN. The wiring is hardly set on such an installation before it becomes obvious that E-Mail, message conferencing, etc. on the LAN might be of advantage. And LAN software modules for such things can be quite expensive. Secondly, late on the afternoon of the second day after installation, an obvious need arises for remote access to the LAN. Inevitably someone in the organization has to be at another building location where it is impractical or expensive to cable a terminal. They may not need LAN access all day every day, but it would be nice to get in occasionally. Sales and field personnel would obviously have an advantage in dialing into "the system". This is currently being touted as "enterprise-



wide networking." It's a popular topic, but largely myth and wishful thinking at this point. The actual concept of linking LANs between cities and so forth is exciting, but the current technology is extremely expensive and as a general rule we feel safe in claiming that it doesn't work well enough to be considered by anyone who doesn't have a tremendous load of early life sins they wish to do penance for by wrestling with it. Wildcat! has made stronger efforts at addressing this than almost anyone else in the BBS industry. Their software not only uses a LAN to support the BBS, but their BBS can be a welcome addition to existing LANs. Essentially, it provides a simple, installable, workable way to provide remote access to LAN systems and local LAN access to the BBS system. Essentially, a low-tech solution to Enterprise-Wide Networking that actually works.

At COMDEX held in Las Vegas this past November, Mustang Software announced version 3.0 of Wildcat! According to Rick Heming, in the progressive evolution of BBS software, Wildcat! had fallen

a bit behind in the features wars, and version 3.0 is intended to bring them back into the forefront with a vengeance. It would appear that it will. Version 3.0 is a complete rewrite of the package.

The new version supports message conferencing strongly. You can carry 1000 message conferences online and the program provides the tools to interface these conferences with almost any distributed conference such as FidoNet, RelayNet, Usenet, etc.

One of the strongest features of the new Wildcat! 3.0 version is "tagging". The program is tag wild. You can browse the various file download areas at will and "tag" files of interest. Once you've completed your peruse, you start the download using a batch protocol, such as ZMODEM - internal to Wildcat! in this release - and all the files you tagged make the trip. This tagging concept is also applied to messages in the message conferences.

For those unfamiliar with Wildcat!, there were a couple of things we liked about this program previously that bear mentioning. For one thing, it supports file descriptions of up to two screen lines. Good shareware libraries require adequate file descriptions and Wildcat works well in this sense. The second item we like is probably minor, most people don't mind this problem, but it is like fingernails on the blackboard to us. It has to do with what is referred to in Wildcat! as **HOTKEYS**. We see a lot of PC-board systems online. We call a lot of them. Many are at 2400bps. Each time you wish to perform a function, you have to wait for the entire menu screen to paint first. While it's painting, you can pound keys, scream at the ceiling, douse your monitor with the contents of your coffee cup, or wet your pants, but neither you nor all the powers of heaven and earth are going to get it to do anything until it paints out the entire screen and issues the command prompt. Entered the wrong command? Not to worry. As soon as it paints **THAT** entire screen you can go back and paint the main menu screen **ALL OVER AGAIN**. If you don't like this, you can turn menus off entirely in expert mode (on some systems) and fumble blindly around in the dark.

Wildcat! **HOT KEYS** function allow you to enter commands as quickly as you can type. Anytime one is received, the current menu painting is aborted completely and new menus begin to carry out your instructions. The result is that if you are not sure what you're doing, you quite naturally pause and the screen begins to fill up with the normal menus. As soon as you see what you want, press the key and **INSTANTLY** it begins to happen. The drawback? Noisy lines can cause spurious characters. These can cause you to do strange things like start a download of Tolstoy's War and Peace at 300 bps. For this reason, **HOT KEYS** is optional and each caller can turn it on or off depending on their particular line noise/error correcting modem environment.

We normally do not print anything received from vendors about their products. There's no high moral ground here. It's just generally horrendous to read and contains a lot of pap our readers have neither the time nor inclination to read. In the never ending quest to sell, most vendors simply lose sight of what is truly interesting about their product. And they quite understandably fail to mention the drawbacks that accompany ANY product. But we had asked John Harrer of Mustang Software to help us a bit with the nuts and bolts of what they were doing so intently in the LAN market. We found the write-up he sent us unusually lucid and it cleared up several questions we had concerning the LAN/BBS connection. It's understandably a little self-serving, but nonetheless interesting. So, in our never ending quest to break every rule in the magazine industry, particularly any we may have accidentally set for ourselves, we present herein his submission largely intact.

WILDCAT! and the LAN Connection

by John Harrer - Mustang Software

The WILDCAT! BBS System from Mustang Software, Inc. is a full-featured Electronic Bulletin Board System that manages messaging, file transfer, and does it especially well in a LAN environment. Any computer with a modem can connect to another computer running a WILDCAT! BBS and send files, receive files, read bulletins, and leave messages. Connection speeds, using normal phone lines, range from 300 to 14,400 baud. When operating on a LAN, WILDCAT! offers all its features to LAN users without need for a modem or any additional hardware.

Those who have called any of the thousands of BBSs around the world are already familiar with the information available. BBSs serve as central crossroads for information exchange. You can post public messages, send electronic mail to specific individuals, and "park" data for someone to retrieve at

their convenience. Making these BBS features available to everyone on a LAN in addition to the dial-in callers turns it into a true information engine, linking the remote and local right at each user's desk.

Before discussing the individual features WILDCAT! has to offer, let's take a quick look at how it operates on a LAN.

HOW IT WORKS

When writing the program code for a multi-line BBS system there are at least two ways of addressing the task of talking to more than one communications port or LAN user at the same time.

The first makes use of "internal program multi-tasking" where a single AT handles the port addressing for all lines, and internally directs the program responses to the ports as needed. This type of setup has the advantage of needing only the one computer, but is limited in that it cannot perform any BBS activities which require outside program or DOS shell support. It is not possible to run doors, external protocols, or any other program as a sub-process, and LAN connections are not possible.

The second uses multiple-CPU operation, a method in which a separate copy of the BBS program is loaded into memory for each line or node. This type setup allows the flexibility for every individual line to perform whatever activity or BBS maintenance event is desired, while allowing the remaining lines to perform independent activity. The disadvantage is the extra memory required if multitasking software is to be used, or additional hardware for network operation if it doesn't already exist.

WILDCAT! makes use of this second method of multi-line operation for the advantages it offers. This type of setup is required for doors and external file transfer protocols in a multi-line system. It also offers the network user the ability to connect to the BBS from any workstation without a modem.



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HARDWARE

In the following discussion the term "multi-line" is synonymous with "multi-node", and the two may be used interchangeably. Likewise, both a "line" and a "node" refer to a single WILDCAT! session connected by a single modem and phone line, or by a single network workstation locally.

Although WILDCAT! can operate multiple lines without a LAN using slave cards or multitasking software such as Desqview, this article will limit discussion to LAN use. WILDCAT! includes support for file and record locking under Novell, 3-COM, Banyan Vines, PC-MOS 386, CBIS Net (Net O/S), LANtastic, and any networks that truly support DOS 3.x SHARE. All versions of Novell are supported in both dedicated and non-dedicated modes.

In a Novell environment, each WILDCAT! dial-in line operates on a separate workstation computer connected to the server. Each line runs its own copy of WILDCAT! which is loaded from a network server's hard disk. Only one copy of the WILDCAT! program and support files needs to be kept on the server's disk, just like any LAN aware program. This one copy is available to each workstation running a WILDCAT! node. All workstation nodes may update and access common message, file, and user databases if desired. Each node requires its own PC (512K suggested, single floppy is ok), a modem, a telephone line, and a connection to the network. Local logon sessions on a network do not require a modem or phone lines.

Since WILDCAT! is designed for many different networks types, assignment of network IDs is done within its configuration program. Release 3.0 will automatically make use of the Novell node ID, but

for now each workstation running WILDCAT! is assigned a separate and unique WILDCAT! Node ID Number in the configuration program MAKEWILD. For each PC on the network that will access WILDCAT!, either locally or acting as a remote line connection, a separate WILDCAT! "startup directory" is created. Every node in a WILDCAT! multi-line system has its own startup directory containing a small configuration file with its own unique node ID number.

Since each node has its own configuration file located in its own startup directory, each may customize the locations of all other support files. Each node could access different menus, bulletins, doors, and other files. All workstations on the network, even without a modem, can also be assigned a node number and startup directory as well, and access the BBS system via a local logon with the COM port set to 0 (zero).

As an example of the above, Mustang Software, Inc. operates an eight-line BBS system on Netware SFT 2.15 with each incoming phone line connecting to single-floppy PC on the network. In addition to the eight dial-in PCs, all nine Mustang Software staff can access the BBS from their desks through the Novell menu system. The two technical support staff read all mail and answer caller's questions throughout the day by accessing WILDCAT! every few hours. Other staff read mail on a daily basis, and use the BBS as a company message center. Management can "lurk" or silently read the tech support message traffic to make certain that the correct information is being given and there are no problems.

SOFTWARE

WILDCAT! operation under Novell does not require loading the optional Novell NetBIOS module at the workstation level. Simply load the workstation shell with ANET3 (ver 2.0a) or IPX and NET3 (ver. 2.12 & 2.15). WILD-

CAT! directly supports Novell without SHARE or the NetBIOS programs.

Each dial-in connection is assigned a "user name" such as LINE-1, LINE-2, etc., and the "user" is given trustee rights to read, write, modify, and create in the STARTUP directory for each node. These rights are extended to each MENU directory, HELP directory, DISPLAY directory, BULLETIN directory, QUESTIONNAIRE directory, DOOR directory, DATAFILE directories, MASTER directory, and any directories containing downloadable files. Read only rights are assigned to the WILDCAT! program directory to enable every node to load the program files. The "user" does not need access rights to the rest of the system, except perhaps the "public" and "logon" directories. A common method is to establish a group name such as BBS and assign these rights by group rather than individually by node names.

A Novell system using a fast hard disk in the server with ample disk caching memory can easily handle a very large number of dial-in callers in addition to the local network users. Dial-in access demand is much lower on the LAN since throughput is usually less than 9600 bits per second, much less than the capabilities of even the slowest Netware configuration.

LAN BBS operation can be monitored easily with a utility program CATEYE. CATEYE is a small TSR (terminate and stay resident) program that may be run on any LAN workstation. It can inform the workstation user (or system operator) of any desired BBS activity by displaying activity notices on the bottom screen line. This notice, visible for about 3 seconds (configurable), is displayed over a foreground application such as a word processor or spreadsheet program. Depending on the configuration, CATEYE might indicate "Jim Hunter downloading GETFILE.ZIP - Node 3", or "Jim Hunter logged off - Node 3". CATEYE also offers direct control over all nodes at the touch of the hot-key ALT

TAB. A screen window pops-up over the application which allows the user to highlight a node and adjust caller time remaining, perform an auto-logoff, enter chat and almost any other option available at the actual BBS workstations. Version 3.0 is currently under development and is slated to include many additional enhanced features for local LAN users, especially in the area of file movement on disk.

The WILDCAT! BBS System is available from Mustang Software, Inc., P.O. Box 2264 Bakersfield, CA 93303. For information or orders phone 800-999-9619 or 805-395-0223. The single-line release v2.15S is \$129. The 1-10 line release v2.15N is \$249. The 1-250 line Professional release v2.15P is \$499 and includes the PRO! Series and network monitor CATEYE. Both multi-line versions will allow access for local LAN users up to the number of lines supported.

BRAINSTORM

Another Mustang Software LAN product with a new release this month is BRAINSTORM. Brainstorm is a "groupware" product designed to enhance office communication. It does so by combining e-mail and group TOPIC discussions in a single, easy to use application. It facilitates group discussion on a network by allowing users to respond to any number of defined topics in an organized manner. Think of it as a LAN round-table discussion, a think-tank, or a bull session.

Most e-mail packages allow user "A" to send a message to user "B" and perhaps a copy to user "C" and "D". While this type of message management is ideal for individual communication, it falls short when the goal is to gather feedback from a group while keeping everyone abreast of the project status.

Brainstorm is not "user" structured but rather "topic" structured. The focal point of a BS message is the subject, or in Brainstorm parlance, the TOPIC.

Groups can start a public topic discussion to stay up to date on the activities of everyone else in the group, while keeping the entire team informed with valuable feedback. An "open meeting" atmosphere allows everyone to chime-in with their ideas. Each additional message in a topic spurs other ideas and responses.

Topics can be public, where everyone is invited to participate, or limited to a specific group of people.

Brainstorm features specific Novell support, a 6K TSR mode, an application menu launch system, user-friendly pull-down menus and pop-up windows, a full-screen editor which can be configured to emulate any user interface desired, a message review and quoting system, and MHS support scheduled for release in the 2nd quarter of 1990.

Brainstorm v2.0 is available from Mustang Software, Inc., P.O. Box 2264 Bakersfield, CA 93303. For information or orders phone 800-999-9619 or 805-395-0223. The 25 user version is \$349 and an unlimited user release is \$699. MHS can be added to either version.

eSoft ANNOUNCES TDBS GAME PACK

eSoft Inc. has announced a special 120-day program to sell a package of third-party game programs for their The Data Base System (TDBS) expansion module. The eight-game package, with a 4-line runtime version of TDBS, will be available for \$195 between December 1 and March 31.

TDBS is a bit unique in the online world. It's actually an expansion module for The Bread Board System (TBBS) BBS software. TBBS allows operators to service up to 32 telephone lines from a single IBM PC compatible machine. The TDBS expansion module provides a dBASE III+ capability. In effect, application programs can be written in the dBASE III+ application language, using standard dBASE database files, and compiled under

TDBS to give true 32-line multi-user access to published databases. This is the first effective solution to providing true online database publishing for small systems. The TDBS expansion module fairly proudly priced at \$995 for the sixteen-line version.

One disadvantage of software that allows multiple telephone line access from a single PC, is that normally these are "closed" systems. In other words, you cannot run external DOS programs or "doors" as part of your BBS. TDBS gives programmers a development language allowing them to create third-party programs to run with a TBBS system. While it still can't run external DOS programs, it can compile and run programs written in dBASE III+.

Soon after the November 1989 release of TDBS by eSoft, numerous third party programmers immediately began development of add-ons for the system. While eSoft founder Phil Becker originally envisioned online inventory, sales, and serious database applications for TDBS, in the world of public dial-up systems, the most popular applications have actually been game software. The TDBS environment inherently lends itself to multiplayer games where callers from across the country can participate in a single game together.

TDBS provides a powerful publishing tool for corporations. But for small time BBS operators running a three or four line system, the \$995 price of the package was a bit hard to justify. To address this, Becker has put together a package of eight games and a TDBS runtime package for \$195. The package is limited to four callers simultaneously, and there is no dBASE III+ compiler included. With the runtime package, operators can buy other games and applications and run them on their TBBS system without the \$995 initial expense.

The game-pac includes Starquest, Card Guppies, Blackjack, Word Scramble, Trivia Quiz, Towers of Hanoi, a Text Editor, and LEXI, a

word game. The list prices of the games total over \$500. Further, sysops can trade in the runtime version for the full \$995 TDBS package later with a \$250 trade-in credit - \$55 more than they paid for the product in the first place.

Among the games, Starquest may be the most interesting. Patterned after the popular Tradewars game, Starquest allows each caller to travel from planet to planet buying and selling various commodities such as technical equipment, minerals, food, etc., transporting passengers, and so forth all for profit. These profits are then used to buy fighters, cargo ships, energy, and so forth. Naturally, the object is to buy/sell/trade your way into the biggest fleet of cargo ships with the most fighters. Along the way, you attack other players fleets, destroy them, and seize their cargo for yourself. Capitalism run amuck across the universe.

Starquest brings some new elements to the traditional Tradewars function. It's a bit more visual, and of course it allows multiple players. As a result, callers can chat with each other while playing, form teams to rape, pillage, and plunder from planet to planet, etc. The dynamics then become especially intriguing. The program is written by Jeff Johnson.

eSoft is also developing a mail program titled TIMS Remote - essentially to allow remote desktop or laptop computers to communicate with a TBBS host system easily. The program is shaping up to be about 60K in size and very easy to operate with a particularly pretty interface. Non-technical users will be able to very easily mail a file or an e-mail message to a TBBS host system, or dial in to request a particular file and pick up e-mail, using a very simple interface. Road warriors who don't know, or care, to learn the intricacies of actually logging onto a BBS won't have to. They'll just send a file or pick up a file with about the same level of complexity as sending a fax. The machine handles all connection, logon, and communication issues

precisely like a full blown Fidonet mailer, with a fraction of the complexity necessary to set one up. The program will also allow two users to transfer files from one machine to another automatically without the usual "who's on first" comedy most comm programs force. The product is still in development and pricing and availability are not set at this point. eSoft Inc., 15200 E. Girard Ave., Suite 2550, Aurora, CO 80014; (303)699-6565 voice.

UNLIMITED ACCESS

GENESIS DELUXE BBS

Carter Downer is in all respects a lucky man. But some days are admittedly luckier than others. A few years ago, Carter had reason to count his blessings. An ex-Marine Corps MP, he lived in a beautiful home in the quite hamlet of Hannibal New York, on the shores of Lake Ontario. He was married to an extraordinary woman and had three young sons. He operated a small, but thriving logging company and served as the Chief of Police of Hannibal New York.

On Sunday Morning, February 9, 1988, Carter was looking forward to a day of rest. Sunday's he generally did not work, preferring to spend the day with his family. This was a particularly good day to spend at home since one of the areas frequent winter blizzards was approaching. He was interrupted by a telephone call from an elderly couple that asked if he could deliver a load of firewood before the blizzard hit.

Downer knew that the four cords of wood on his dump truck were frozen into a single solid mass. And he knew that within an hour or so, it would be snowing heavily. But the couple were not young, and their primary heat source was firewood. He pulled on his outdoor gear and headed outside.

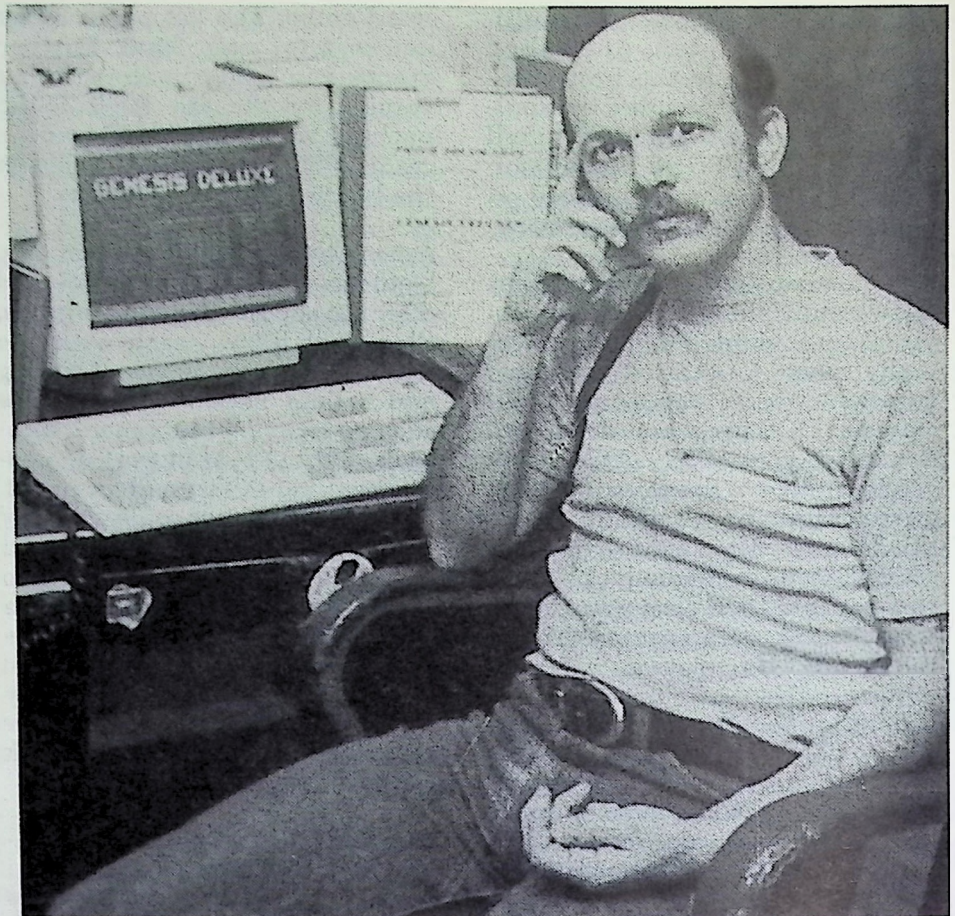
Once at the couple's house, Downer attempted to dump the full load of wood a few hundred feet from the house. But the wood was heavy with ice and the hydraulic dump bed groaned under the strain. Hearing a noise under the bed, Carter reached in to check one of the hoses. It blew. The heavy truck bed slammed down and instantly pinned Downer's left arm to the under carriage in a merciless iron jaw.

Aside from the pain, Downer was quite effectively stuck to the truck. The temperature was dropping and the snow was picking up. He knew he had to get free of the truck and get to shelter soon if he was to survive. For two hours he screamed for help and strained to raise the bed, pull his arm free, or both to no avail. Strength failing, he realized he was not going to get it free and the likelihood of anyone finding him soon didn't appear good. With his free right hand, he reached into the cab of the truck and pulled out a small hand ax. He said a brief prayer and began the gruesome task of hacking his own arm off below the elbow with the ax.

Downer awoke in a VA hospital. By a stroke of luck, an accomplished Osteopathic surgeon was on call that afternoon. Despite the grisly state of the arm, the doctor decided to attempt reattachment. It would not be particularly functional, but it would fill a sleeve. Over the next five months, Downer endured an excruciating series of surgical grafts and corrections.

On release from the hospital, Carter was driven to a small rented home he'd never seen. In the interim, he had lost his business, his equipment, his home, his life savings, and his job - a most thorough bankruptcy. His wife had taken a job as a nurse's aide to support him and their three sons. He had lost every material thing he owned.

Surviving on disability, preoccupied with the extent of his losses, and enduring more or less constant pain from his injuries, Downer began a downward spiral of de-



pression and regret. His wife tried vainly to interest him in something, anything. But physical activity was out of the question and most of Downer's life had involved physical activities. He was listless and despondent.

A family friend noted that some men found personal computers diverting, and despite the family's precarious financial position, Carter's wife bought him a Tandy 1000 computer in the hope it would give him something to do.

It did. Carter started teaching himself what he could and eventually contacted the Central New York PC User's Group BBS. There, he encountered a number of people willing to help him learn the rigors of computer use and programming, primarily in PASCAL.

Along the way, Carter developed an interest in becoming a system operator himself. He registered a copy of GENESIS BBS. Genesis was written by an intensely bright young Cambodian refugee many consider a programming genius

named Keriworth Path. GENESIS was developed in Borland's Turbo Pascal.

Housebound, Downer found running a BBS therapeutic. For sixteen hours a day, Downer tended his little BBS mother hen fashion. Still strapped for cash, he couldn't afford a hard drive. So he developed an elaborate color coding scheme for hundreds of 3.5-inch floppies he kept in a shoe box next to the computer. Whenever a caller would access a particular download directory, he would deftly pull the correct floppy from the shoe box and slam dunk it into the disk drive in time for the directory to be dutifully displayed to the caller. That's not the way EXEC-PC does it, but it worked.

He liked GENESIS very well. But Keriworth Path had apparently lost interest in the product. There hadn't been an update in a couple of years. Carter contacted Path and inquired about when the next release might be available. Path explained that he was attending college, had a fiancée, and wasn't

spending a lot of time with it any more. Eventually, Carter bought the rights to the program from him.

Today, **LATE NIGHT BBS** operates at (315)592-7300 on three nodes with what Carter tells us is over 2 Gigabytes of storage capacity. We don't know how much of that is hard disk and how much is in the shoe box but it is impressive. And he's just released version 2.5 of **GENESIS**. The program is no longer shareware. But it is reasonable at \$149 for unlimited nodes.

LATE NIGHT demonstrates the dark side of ANSI graphics run amok. The screens are extravagantly gaudy, but they certainly get your attention. **GENESIS** is a LANable after the fashion of **PCBoard** or **Wildcat!** and Carter has done some fascinating things with getting it married to **Quarterdeck's DESQVIEW** multitasker for single machines. He uses the **LANTastic** local area network for his three node support system.

GENESIS is actually a software product in the throes of rebirth. If it once lacked from neglect, it does no more. In his latest release, Carter incorporates a total of 26 different enhancements to the product. And if you dial into the system, you may have a difficult time actually seeing what it's like. Still hovering with shoe box at the ready, Carter will take you on a whirlwind tour of the system that will leave you a little blurry eyed and slightly motion sick as he slams from screen to screen with the familiarity of the mad scientist with his favorite **Frankenstein**.

But we did pick up on a couple of innovative items. One that caught our eye is, like many good things, simple, unexciting, but why didn't somebody think of it before. All BBS software allows you a couple of stabs at entering a password. If you don't hit the magic word in a couple or three tries, it simply drops the connection. **GENESIS** allows three attempts at a password, if you can't quite come up with it, it allows you to leave a message to the sysop. This is a

marvelous idea. Fill a few screens full of expletives at the system operator for allowing you to forget your password. Normally, you would have to dial back in, create a fake new account, and then leave a message to the sysop - confusing for all parties.

GENESIS has a couple of other unique features. One thing we found fascinating was their use of surveys. Many systems allow surveys, but most simply compile answers to multiple choice questions. **GENESIS** allows you to add comments to questions. One function the surveys allow is quick contests. You can bet download points or online time on a simple yes or no question - "Will the Giants win by 3 Sunday" for example, and the system pays off once the sysop enters the answer. An online trivia challenge allows you to win points.

The program also features a crude built-in database. The system operator specifies the number of fields, field titles, etc. Callers can browse the database or fill out information on their own entry for matchmaking purposes etc. It is simple, and it doesn't interface well with other database programs, but it is built-in and seems to work well. It offers another series of possibilities to creative operators.

GENESIS has a few limitations on number of message areas, number of file areas, etc. But Downer seems to be focused on **DOORS** as a solution. He enlisted the aid of John Schreiber to write **GENPC**, a door converter that will convert ANY **PCBoard**, **Wildcat**, **QuickBBS**, or according to Downer, any other similar door program for use with **GENESIS**. And Marshall Dudley, author of **DOORWAY**, did a drop-to-DOS door for **GENESIS**. As a result, **GENESIS** may be the optimum platform for taking advantage of the growing wealth of third-party programs that can be coupled with standard BBS fare to add unique features.

Carter is working like a madman to bring **GENESIS** back with new features and trying to promote this

excellent, if somewhat forgotten software program. He has a dream of developing the program into the best BBS software available, selling it widely at his \$149 price, and eventually supporting his family and going off the disability rolls. We can't help but laud that kind of effort, and those kind of goals.

Despite his losses, Carter Downer is a lucky man. He has his life, a supportive wife, three sons, and a mission - to bring **GENESIS** back to life. And why not. It very clearly has done the same for him. **Semper Fi Carter. Late Night BBS, PO Box 267, Hannibal, NY 13074; (315)592-7300 data.**

COMPUTER VIRUS INDUSTRY ASSOCIATION BBS

Computer viruses are big business. The only thing that has grown faster than fear of viruses is the number of scams involving the cures. Anti-viral techniques comprise the patent medicine show of the nineties. The press has seized on the virus as a sure seller and repeatedly done stories on coming virus plagues due by a certain date. That the "outbreak" doesn't ever seem to quite materialize does little to dampen the spirit. It sells magazines.

Bulletin board systems take the brunt of the blame from self-appointed experts on this subject. There is little to support the theory of BBS systems as a source other than common sense. It would make perfect sense, at first glance, that BBS and shareware software were the prime carriers of viral software. It hasn't historically been the case. In fact, no major spread of viruses can be traced to electronic bulletin board systems at all, while at least two commercial software releases have included virus infections and most outbreaks appear to have occurred in University computer labs and corporate pools of PCs where frankly, software piracy is the most exciting diversion available. Since piracy is illegal, if your company system or University lab does suffer an outbreak, it's best to play it safe

and blame it on shareware downloaded from a BBS. It wouldn't play well to publicly suspect it was the 12,000 copies of Windows making the rounds that led to the spread.

As an individual user, your chances of encountering computer viruses are a little better than winning the lottery, but not by much. And dialing BBS systems and downloading shareware by the truck load wouldn't seem to up the odds noticeably. Everyone I've spoken with who monitor BBS professionally and download software as a way I've life seem unanimous in that you can't buy a virus online. Perhaps it's because BBS operators were dealing with Trojan Horse programs for years before viruses appeared, or perhaps it's because the accusations of BBS systems being the Typhoid Mary have caused most sysops to be particularly aware of the problem, in any case, BBS have been unfairly painted as a source of virus programs.

All that notwithstanding, it's little comfort if YOUR system suddenly sports a Jerusalem B star in the middle of the screen or if **YOUR COMPUTER IS STONED** starts cropping up in the middle of your masterpiece novel. For the unlucky few, viruses are an unpleasant and frightening experience. And they can cause the loss of data. The sense of intrusion on your data by this invisible force that only shows itself after the damage is done can be a bit emotional. The sense of violation can only be compared to the rather rude and unlikely analogy of being raped and not knowing about it until you wake up pregnant.

In one way, the arrival of the virus has been a good thing. As the prices of hard disk drives have fallen, quality assurance has suffered. And any dying disk drive, fading power supplies, or static zapped keyboards can be safely blamed on the feared virus. But even better, the arrival of the virus has caused people to back up their data (REALLY - I DID back it up this time). A case could be made that more

people have had a recent backup at the time of their hard disk crash (everyone has one, it's when - not whether) because of their fear of viruses than otherwise would have had.

Still, if you do suspect a virus, what do you do? The first thing you do is backup your data. There is really no danger in this if you know what data is. It is NOT your copy of Windows. Data is the word processing text files, spreadsheets, database files, etc. that programs operate on. Viruses are computer programs, nothing more or less. They are not alive. You have to actually run them to get them to do anything. And you can't run files ending in .TXT, .DOC, .DBF, etc. They must carry a .SYS, .EXE, .COM, or .BAT suffix to be viable. All those files, coincidentally, are still on your originally purchased diskettes anyway so they ARE backed up safely. The damage you fear resides in the loss of the data files you have created with those

programs. You can quite safely backup these data files if your system is working at all.

After your data is safely backed up separately, with NO executable files included, eradicating the virus is relatively simple. Simply erase every drive on your system and reformat it. The virus, of whatever strain, is gone. But you do face the unpleasant task of rebuilding your system by installing all your programs from the original diskettes before reloading your data. And that can be a daunting bit of work. In most cases, you don't need to do it. There are software utilities available to fix your machine "in place".

John McAfee has done little to quell the hysteria. McAfee Associates derives its income from curing viruses. But he does do the best anti-viral utilities around, he releases them to individuals as shareware at a modest cost, and he runs a superb BBS focused on computer viruses. The **HOMEbase** BBS operates on six lines in Santa

HH Info-Net BBS

New Hartford, Connecticut

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9600 baud HST DS

(203) 738-1046
2400 baud MNP



Clara California using TBBS software. Five 2400 bps lines are available at (408)988-4004 and a single U.S. Robotics high-speed line is available at (408)988-5138. The short run is, McAfee does seem to know more about viruses than anyone we've encountered, his utilities are updated virtually monthly to cover new viruses, and his system provides some of the best information available on detecting, and getting well from, computer viruses.

Several utility programs are freely available for download by first time callers. His Virus Scan utility is available in the file SCANV67C.ZIP. The file contains the SCAN.EXE program, some reasonably good documentation, and a validation program to make sure you have received his scan program and NOT a virus posing as one. The problem with most anti-viral utilities is that they themselves become the target of viruses which claim to be the utility. McAfee's validity program is a good idea, but anyone capable of writing a virus we must assume is also capable of defeating a validity check program. It would likely be best to download these utilities directly from McAfee's BBS.

SCAN.EXE scans your hard disk drives file by file to detect any of 144 basic known virus programs and some 223 variations on the theme. It will tell you if you have a virus and will return a code indicating what particular virus you're suffering from. A second utility, Clean-Up, comes in the file CLEANP67.ZIP. If you run CLEAN.EXE using the code returned by SCAN.EXE, it will actually go in and attempt to locate the infected files, remove the offending virus, and even try to repair the affected files. According to McAfee, 95% of all viral infections are caused by a handful of ten common viruses. STONED and JERUSALEM B seem to be the most common in North America, so the CLEAN technique generally works quite well.

A third utility is titled NETSCAN. It comes in NETSCN67.ZIP and it's used to detect viruses on Local Area Networks (LAN). A series of other utilities will guard your system from viruses, detect viruses while copying any files, etc.

McAfee quite professionally updates his utilities to account for new virus discoveries. For individual home users, Virus Scan can be registered for \$25 while Clean-Up makes the trip for \$35. In the event they don't handle the problem, McAfee will lend a hand as a consultant.

In addition to the utilities, Homebase BBS offers an impressive array of information online superbly focused on the virus problem. A Virus remedy database allows you to key in part of the name of the virus you suspect you have. The database produces some information on that particular program and describes a cleanup solution. The system maintains a special upload area where callers are asked to upload viruses or suspected viruses. You can't download from this area for obvious reasons but you can view it and it appears that a large number of individuals have uploaded files for examination.

We also found a fascinating file diagramming hundreds of viruses titled VSUM9010.ZIP. This is actually a text file titled *Virus Information Summary List* prepared, at some obvious effort, by Patricia Hoffman. Ms. Hoffman has documented hundreds of viruses by name, characteristics, original location, and recommended cure.

McAfee has assembled a very effective information service, his utilities are both effective and consistently updated, and despite the obvious profit motive, his presentation is lucid, informative, and for the most part devoid of hysterical vira-hype. If you do encounter a virus or have concerns regarding prevention, this system is probably the best place to start.

The system is also the home of the Computer Virus Industry Association. CVIA and McAfee Associates appear to be one and the same but the association does make available a 70-page information packet titled *Computer Viruses: Background, Detection, and Recovery* that proves interesting reading. To obtain a copy, they ask you send a 9X12 envelope with \$2.40 in postage and \$4.00 U.S. funds to Computer Virus Industry Association, 4423 Cheeney Street, Santa Clara, CA 95054; (408)988-3832 voice; (408)970-9727 fax.

ADOPTION BBS - THE WOMB

Adoption is probably best viewed as a sincere attempt to put the best face on an already poor situation. Too often it is portrayed as the perfect solution to teen pregnancy, abortion, and the ravages of poverty. For those who must deal with the realities of the adoptive process, it's actually dramatically less than ideal and the fallout from adoptions has the tendency to haunt the participants for decades.

The case of the young New York mother who signed release papers giving her child up for adoption comes to mind. Within two hours of the child's birth, she suffered a change of heart and wanted to keep her baby. The papers she had signed, drawn up by the adoptive couple's attorney, explicitly stated that she could change her mind within 30 days of the birth. What she wasn't told was that while she might change her mind, that wouldn't necessarily get her baby back. The adoptive parents challenged the reversal and after months of dealing with a legal system primarily devoted to its own self-perpetuation, the young woman was told the adoptive parents would probably provide a better environment for the child. She and her baby are separated permanently.

Thousands of adopted children spend agonizing years and thousands of dollars on a too often fruitless search for their biological parents. In many cases biological par-

ents too wander about for years trying to locate their lost children. The nature of our adoption system makes closed records the norm and even if the parted families do manage to find each other, there is plenty of room for disappointment. It may not be the joy envisioned.

On the other hand, many who gave birth as teenagers chose to give up their offspring and went on to start new lives, later marrying and starting new families. Twenty years later a stranger knocks on the door to gratefully and tearfully complicate, and in some cases destroy those new lives, reminding them of a past they would as soon forget.

There are a few heartwarming tales of reunion of course. But basically the universal plan is for male and female of the human species to mate for life, rear their young, and extend their families whole from one generation into the next. Anything deviating from this pattern generally brings a recurring dose of agony, small or large, to most all parties involved.

Bill Gage of Brooklyn New York did locate his biological mother. As it turns out, her name was Elfriede Lucie Stokes. She died by lightning strike on May 31, 1976 in Hameln West Germany. Gage has erected a bulletin board system in her memory dedicated to the support of adoption reform, search and support movements, and open adoption records - to help others in their search before it is too late for them as well.

The Womb BBS operates in Brooklyn at (718)998-6303 and provides a sterling example of a superbly focused special interest BBS system. Gage also edits a German newsletter titled *Geborener Deutscher*. He has amassed an amazing compendium of fact and commentary on virtually all aspects of adoption.

What most profoundly impressed us about the Womb was its sense of balance. The problems faced by those touched by adoption are like a multi-faceted jewel. Your posi-

tion is apt to be a function of the angle from which you view it. And the positions tend to be overcharged with emotion - simplistic answers to adoption problems almost always inappropriate. Despite the fact that Gage is squarely on the side of open adoption records and the rights of all parties to information, his BBS provides on of the fairest, most balanced blends of information on the topic conceivable. For example, the board prominently features full-text collections of Dear Abbey and Ann Landers syndicated columns from over the years that deal with the subject of adoption. Both women seem to urge readers to NOT search for lost parents and children and seem to defend closed records as a right to privacy.

The Womb also carries the full text of 17 newspaper stories, 9 magazine pieces, and transcripts of 6 radio/television talk shows on the subject by such luminaries as Larry King and Sally Jesse Raphael. Several newsletters are presented online including *KinQuest* and *Adoption Circle*.

One area provides search tips. We were intrigued to learn that the first three digits of your social security number are determined by location of issuing office. Numbers beginning with 486-500, for example, are issued in Missouri. A file provides the full key to numbers and states. And a database lists all adoption agencies in New York.

Extensive book reviews cover such titles as *Adoption Without Fear*, *Morning Glory Babies*, *Child of Rage*, *The Magnetism of Blood*, and *Nature's Thumbprint*. Abibliographic database cites hundreds of books, magazine articles, and scholarly journal pieces on elements of adoption.

The system also carries several FidoNet Echomail conferences, including, naturally enough, the ADOPTees conference and a conference shared across the Atlantic between German and U.S. BBS systems titled DEUTSCHES.

The Womb has operated continuously since April 14, 1989 on a modest AT class computer with but 40 MB of storage and a single telephone line. It is a bit Spartan graphically. But the system is superbly focused on the adoption theme and we found it not only expertly organized, but utterly fascinating. William Gage, The Womb BBS, 2300 Ocean Ave., Brooklyn, NY 11229; (718)998-6303 data; (718)627-0811 voice.

BYTE MAGAZINE'S BIX ONLINE SERVICE

by Alan D. Applegate

When you ask the typical modem user to list the on-line services they're familiar with, the names "CompuServe" and "GEnie" generally come to mind first. One of those mentioned less frequently is McGraw-Hill's BIX - the BYTE Information Exchange. To a certain degree, BIX is one of the better kept secrets of the on-line community.

BIX began in 1985 as a PC-based BBS running Fido software on a single line, intended to provide extracts from *BYTE Magazine* and to give a platform for a direct dialogue with BYTE readers. After a single editorial mention in BYTE, the system was flooded with calls. Steve Laliberte, the Director of BIX, notes that within two weeks, New England Telephone sent the "telephone police" to shut the system down because it was jamming phone circuits all over Massachusetts, where the BIX computer is based. It was immediately apparent that the idea of such a service appealed to the BYTE readership.

BIX now operates on a Pyramid mini-computer running UNIX. BIX selected UNIX as their platform of choice so that they could have an easier transition over time to larger platforms as the system grew. Laliberte says this plan has worked well, with the software moving upward with few changes as equipment has been upgraded.

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The all new Message Manager for TDBS systems. This program is the creation of Ben Cunningham, a pioneer in writing quality programs for The Data Base System (TDBS). Some of the highlights of this package are: Support for up to 10,000 message areas; SysOp configurable full screen editor; SysOp configurable reply quoting; the capability of editing messages after they are saved; the ability to perform any kind of maintenance while the BBS is on-line; the ability to import and export text while the BBS is on-line; users can change several read options at any time and save them to disk to make the changes permanent; users can subscribe to up to 60 areas and see all the new messages in each area when they enter the message menu; message areas can be made to be anonymous (user name not in message headers); message areas can be configured to be auto-addressing (i.e. all original messages are sent to a specified name); complex and/or search capability on any combination of FROM, TO or SUBJECT fields; message text can be searched for strings; FidoNet format message import and export utilities are now being developed, etc. This program will be priced starting at \$179.00.

The extremely popular game of StarQuest. This is the first multi-player, multi-user space game to run under TBBS/TDBS. You can create a universe of a size that is best for your system and its users and your users create and capture settlements and become active wheeler/dealers across your universe. Their settlements can be attacked and captured whether the user being attacked is on-line or off, and as the users gain in strength and worth the computer controlled pirates and the tax assessor will be there to lend a helping hand. This on-line multi user game has already proven itself to be popular with the users and it's not only a lot of enjoyment for them but it can quickly pay for

itself on systems charging for access. This program is priced at \$149.95.

The powerful and productive On-Line Sales Manager. This on-line catalog sales program is written by Jeff Johnson, another pioneer in TDBS software, and it easily shows the power and capabilities of TBBS and TDBS. The Sales Manager will display a catalog of items for sale under categories you specify, each item can have a full descriptive text file attached to it and the user can place an order at any time and continue to browse through the catalog. When done the user selects to order and is presented with each item and given the opportunity to indicate how many are to be shipped. Once all items are ordered the software will check to see if the customer has an account, if not it will prompt for all necessary order information. Developed as a modular package this software will handle everything from a low level order entry system to a fully featured point-of-sale package that will print invoices, track inventory, track billing and do all the things you would expect of a full sales package. It really must be seen to be appreciated. This package starts at \$395.00.

There's more available for the TBBS/TDBS SysOp, as well as for anyone interested in an Information System (BBS). If you want to learn more about TBBS/TDBS just call our system and carefully browse through Our Demonstration and Sales Area and take the time to register as a customer. GW Associates offers full support to all SysOps and we have several excellent programmers available to help with your applications and customization. Please call our system at (508) 429-1784 (N,8,1) and keep up with our new releases or call us on our voice line at (508) 429-6227 if we can help you in any way. Installing commercial systems is our ONLY business, and we're very good at it!

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The service uses the **CoSy Conferencing System**, and credits the University of Guelph for its development. I confess to being uneasy about using a system with its roots in a university with a name like that. It sounds like someplace a Klingon warrior would go after graduating from high school. But odd names aside, CoSy is a classic UNIX conferencing system. Although esoteric by any description and unfamiliar to most BBS callers, such systems reward the patience of the user with a powerful, strangely addictive palette of navigational tools. BIX purchased rights to the CoSy source code so that they may have a great deal of flexibility with the operation of their system over the long term.

BIX offerings are somewhat more Spartan than those of its competitors. On BIX, you won't find on-line shopping, the latest news wire features, multi-user games or weather reports. What you will find is an amazingly complete selection of message conferences, electronic mail, files for downloading (what BIX calls "listings") and of course, CBIX, the real-time

inter-user conferencing facility (CB simulator). BIX also offers the complete text of BYTE Magazine articles and reviews since August, 1988, the files that accompany those articles, and *MicroBytes*, industry news briefs on technology and computing topics. BIX also offers *McGraw-Hill News*, an extra cost service that provides current articles on general business related issues.

Laliberte explains that BIX is designed to appeal to the computer professional, and that the focus is good content with a low "signal to noise" ratio. One example of this mandate are the file areas (listings) on BIX. Laliberte says that all uploads are validated and verified by BIX staff members as to their quality and usability.

BIX isn't exactly easy to use - at least not at first. By default, it operates in a menu mode designed for the beginner. The main menu on the system, with less than ten entries, is deceptively bare. Function descriptions are rather terse and unappealing. This contrasts with systems such as CompuServe

which have several options that seem to urge participation. An 80-page, large-type manual provided by BIX provides an exhaustive overview of the entire menuing system. The small page count of the manual alludes to the simplicity (lack of depth, really) of the menu structure.

BIX Main Menu

1. Electronic Mail
2. Conference Subsystem
3. Listings
4. MicroBytes - Industry News Briefs
5. Subscriber Information
6. Individual Options
7. Quick Download
8. Command Mode (abandon menus)
9. Logoff (bye)

Despite the plain appearance of the menus and small selection of them, it's easy to get lost. BIX is built almost entirely around its conferencing system. From message conferences to file listings to CBIX, most everything is accessed as a conference area or topic in a conference. If you're accustomed to using PC-based bulletin board systems or major on-line services, BIX will seem almost completely foreign. The menu structure helps little with this feeling.

The real power of BIX can only be realized if you abandon the menus, and interact in command mode. In this mode, you issue system commands with English-like syntax. Instead of navigating the menus to join a message conference, you can simply issue a command from any ":" prompt:

:join borland turboc

This command would select the "borland" conference and the "turboc" topic area. Once in the topic area, you can begin reading messages immediately, select another topic (such as "tpascal" or "quattro" in this example), access the corresponding listings (file) area, or leave the conference entirely.

Although it takes time to learn the important commands, once you acquire the basics, the system is

quite usable. BIX provides a comprehensive user manual of over 225 pages to assist users who access the system in command mode. The book lists available conferences, and tells in detail how to navigate and use the system. Each section of the manual is broken into basic, intermediate and expert levels of commands so you can increase your capabilities as you learn the system.

Once you have joined a conference on BIX, the system will track message activity so that message pointers are maintained for your account. This allows you to easily access new messages posted since your last call, and tracks how far you have read messages in a particular topic area.

BIX offers over 300 conferences. Several organizations and businesses have their own conferences on BIX for such things as technical support assistance. They represent about 60-70% of available conferences. There is also a wide selection of public conferences on particular topics from computer software, hardware and languages, to science fiction, music, pets, and technology. Each conference has its own message area, and many of them also have associated listings areas. Some periodically provide scheduled CBIX chat conferences as well. All functions related to a conference are accessed as topic areas inside the conference itself.

Jerry Pournelle runs "Chaos Manor" a compendium of his columns and a forum for users to communicate with the noted BYTE Magazine columnist. Reading his treatises on-line provides a different feel altogether. The electronic medium somehow puts you on the same level as, and closer to, the experts.

The "Technology" conference is a busy place on BIX. With several topics under it, you'll find everything from serious discussion about leading edge developments (nuclear, computer, etc.) to humorous stories from the high tech arena (like cooking pizza in a chip-

curing oven), to voting on which high tech home gadget you'd be most likely to replace if it broke (the microwave oven seems to have won, but electric bread makers are close).

One of the most useful features of BIX is the BIX Index, which allows you to search all conference messages for a particular text string. Since discussions about a particular issue or topic may be taking place in a number of different conferences, this feature allows you to quickly and easily locate message activity that pertains to your needs. A sample search looks like this:

```
Word or phrase to look for (or 'quit'):  
boardwatch  
Searching the Index for 'boardwatch'...  
2 entries found.  
....display the result on your screen  
FILE.....put it in your scratchpad  
QUIT.....discard the entries  
, FILE, or QUIT:  
  
Item.....  
Conference/Topic Messages  
  
'boardwatch'.....  
bbs/other  
1206  
bbs/sysops  
529  
  
Word or phrase to look for (or 'quit'):
```

With BIX' easy message retrieval options, you can very quickly join the desired conferences and read the messages referenced by your search.

Another BIX feature, *MicroBytes*, provides the latest computer industry news and views. Like most BIX services, *MicroBytes* is folded into the conferencing facilities of the system, with articles being retrieved in the same manner as conference messages. In fact, although it has its own entry on the Main Menu, *MicroBytes* is just another BIX conference, except it's read-only.

The product support conferences on BIX are among the more active of any on-line service. As a Borland language user, I frequently look to BIX to provide the latest informa-

tion about Borland's products. Lively and dynamic message threads, the latest software patches and work-arounds, as well as file listings specific to the products are all a simple series of commands away with BIX.

Some of the more esoteric conferences on BIX suffer from a serious lack of attention among users. As the owner of an NEC laptop, I was hopeful that I'd find information about replacement batteries for my unit. I entered the command `join laptops/nec` for the laptops conference, NEC topic. After reading messages, I found that the last post was made in July. My message asking about batteries has gone unanswered for weeks. BIX must not exactly be a haven for NEC laptop users.

Because BIX is an extension of *BYTE Magazine*, messages and information on BIX are technically "published" materials in electronic form that are the property of McGraw-Hill, *BYTE Magazine* and BIX' owner and publisher. Normally this subtle difference from other on-line services doesn't cause problems, but it put a wrench in the works with BIX' efforts to provide information to the bulletin board community. For a nominal annual fee, BIX provides *MicroBytes* to BBS Sysops as "BBX" - the Bulletin Board Exchange. In the past, Sysops would dial the system either manually or with a scripted terminal program and capture or download the specially formatted daily news updates. BIX decided to provide FidoNet access to BBX as well, and part of the original plan was to also serve as a central EchoMail distribution point as a community service to FidoNet. Bob Hartman of Bit Bucket Software was hired to write a FidoNet interface for BIX. As plans were evolving, however, it became apparent that the usual FidoNet political turbulence mongers would collectively fuss loud enough to stave off any linking of BIX and FidoNet EchoMail. One of the oft cited reasons for the protest was the "publishing" element. Would BIX "own" EchoMail by being a "publisher" of the material? Rather than pursue

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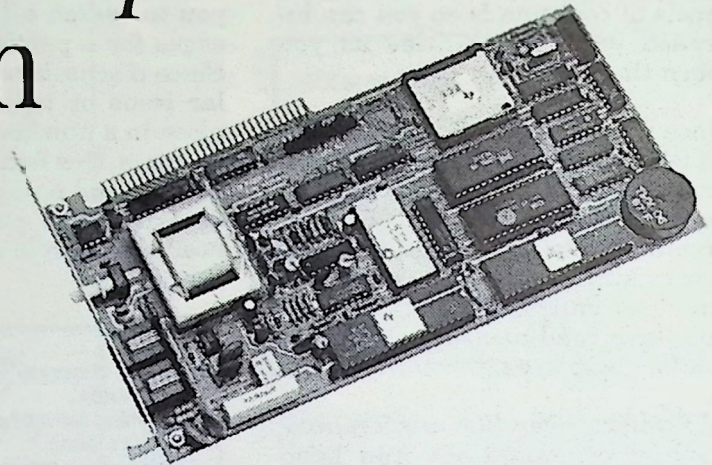
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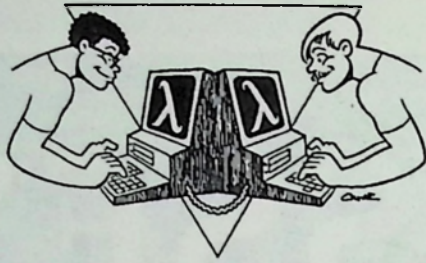
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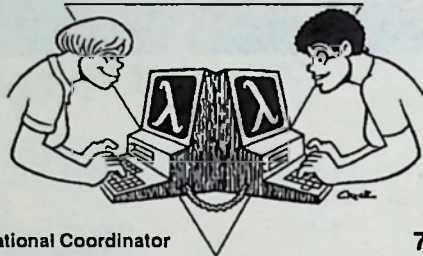
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the issue and become the FidoNet *arguer du jour*, BIX abandoned plans for EchoMail links, although BBX itself is now available via FidoNet.

BBX is available to sysops at a cost of \$49.00 per quarter, and includes a regular BIX account. Connect time, if applicable, is additional. Interested parties can contact BIX Customer Service for sign-up information.

Where CompuServe and services like it are designed to appeal to a broad audience, BIX' philosophy is to focus on the microcomputer professional. Laliberte notes that the needs of the professional vary considerably, which is why there is a selection of general interest, non-computer conferences on the system, and facilities such as the CBIX CB simulator.

Currently, BIX has over 40,000 users registered on their system, and can handle more than 200 simultaneous calls. The system line

count is upgraded about every six months to accommodate the steady flow of new users.

BIX has a rather unique pricing structure. Annual subscriptions to BIX (which are separate from and do not include BYTE Magazine subscriptions) are \$156.00, charged quarterly in \$39.00 increments. At the equivalent of \$13.00 per month plus carrier charges, BIX is more expensive than its less focused competitors.

BIX can be accessed through three avenues: direct, via BT Tymnet, and via BIX' own BIXnet network. When called direct the user pays for the toll call but pays no additional charges to BIX. BT Tymnet access is available at \$6.00/hr. peak and \$3.00/hr. off-peak from 7:00 pm to 6:00 am weekdays, and all day weekends. BIXnet access is available at \$6.00/hr. peak and \$2.00/hr. off-peak from 5:00 pm to 8:00 am weekdays, and all day weekends. BIXnet access can also be provided on an unlimited, flat rate, off-peak schedule for \$20.00 per month. BIXnet is currently

available in New York City, Washington DC, Toronto, Los Angeles, San Francisco and Chicago. BIX plans to bring BIXnet on-line in a few additional cities every year.

You can obtain a BIX account by dialing your local BT Tymnet access port and entering BIX at the ID prompt, or by dialing direct. When BIX answers and prompts for your name, enter NEW to begin the registration process. You may also call voice on the toll-free BIX Customer Service line to start an account. BYTE Information Exchange, One Phoenix Mill Lane, Peterborough, NH 03458; (800)227-2983 voice, (617)861-9767 data.

PENN & TELLER'S MOFO EX MACHINA BBS

It's thoroughly bizarre, but that's ok. Maybe the world doesn't need one more PCBoard with "messages and downloads." It was so thoroughly bizarre we loved it.

Penn & Teller are two guys who have been doing "entertainment" for the past thirteen years. They are a bit hard to define because they do everything, books, films, plays, PBS specials, stand up comedy, and magic. But they've developed a following. Their PENN AND TELLER off-Broadway show scored for 22 months. They have a home video out titled CRUEL TRICKS FOR DEAR FRIENDS. They dumped a box of cockroaches on David Letterman's desk. They've appeared on Saturday Night Live and MTV where they sang La Bamba in Hebrew. They star in a feature length film titled PENN & TELLER GET KILLED. In almost every aspect, they entertain but in thoroughly unexpected ways. And, their BBS follows the same theme very closely.

The BBS is titled MOFO EX MACHINA at (212)764-3834 and runs on a tottering Epson Equity 1 with a 20 MB hard drive and an ancient Hayes 1200 on a single line. It uses Microstuf's Remote Version 1.3 which was meant for logging onto a remote system a la

Carbon Copy or PC Anywhere - not for BBS duties. The program allows access to a custom Turbo Pascal menu program ostensibly created by MOFO the Psychic Gorilla. It's down more than it's up and connecting and actually logging on is a bit of a BBS roulette lottery. But we were most thoroughly hooked from the moment we saw **PRESS ANY KEY...** and we did. It responded with **EXCEPT THAT ONE.**

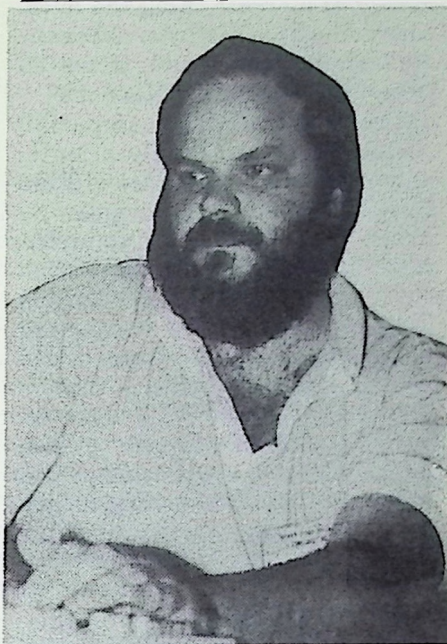
After dialing the system, if it should happen to be in operation and asks for a password, enter MOFO all upper-case. You will be greeted by what looks like a connection to the New York City Traffic Department providing an array of confusing instructions for overcoming a mishap that issued handguns to meter maids a year or so back.

The main menu is most bizarre with entries for a computerized card trick. It is meant as an effort to dupe your friends, but it always renders the answer "three of clubs - is that your card". If you say no, it drops carrier.

Another selection offers to download a blank file allocation table to your hard disk - effectively erasing all of your files. That this would be technically impossible doesn't really detract from its effect. You're asked if you want to proceed with the download and if you reply in the negative, the program accuses you of wimpdom.

The system also describes a Penn & Teller Fan Club you can join for \$6 and lists current tour schedules for the deranged duo. Penn & Teller's MOFO Ex Machina, PO Box 1196, New York, NY 10185; (212)764-3834 data.

FidoNet Mailer Wars One Year Later



by Bob Hartman

A year ago Boardwatch Magazine was right on top of a story that threatened to turn FidoNet upside down. The authors of FidoNet mailer software were fighting a tooth and nail battle, and it looked like the Sysops of FidoNet BBS's, and consequently their users, were going to get caught in the middle. On the one hand were the authors of BinkleyTerm, D'Bridge and Frontdoor, and on the other, the author of SEAdog. It was obvious that neither side was going to blink in this war of wills unless someone external to the process came to help out.

Fortunately, Jack Rickard of Boardwatch Magazine saw the problem start at an early stage, and got the ball rolling on negotiations between the warring factions. At stake was the ability of FidoNet to continue to have all systems send and receive mail with all other systems as quickly and transparently as possible. Jack enlisted the help of Phil Becker (President of eSoft) to act as negotiator between the two sides and a settlement was quickly reached. FidoN-

et wasn't going to die as long as all parties were willing to give in a bit! A year later, where have things gone?

Well, its difficult to really tell whether progress has been made. Shortly after the agreement was reached, Bit Bucket Software pulled all beta versions of BinkleyTerm out of the field, and started work on a new file transfer engine that would be able to efficiently transfer files with SEAdog systems. Shortly thereafter, Bit Bucket Software also entered into an agreement with eSoft to create The Integrated Mail System (TIMS) for use with TBBS systems. The TIMS program used code that was based on the same protocol engine. A year after all the shouting, BinkleyTerm, SEAdog and TIMS all transfer FidoNet mail and files with each other at top speeds.

In the previous two years of being used, BinkleyTerm had never reliably transferred files with SEAdog systems at anywhere near top speed. Clearly the new specification that was documented by Phil Becker (from SEAdog source code provided by Thom Henderson of System Enhancement Associates) was able to be easily integrated into existing systems (BinkleyTerm), and more importantly, it worked! TIMS, using the same protocol, was able to show the protocol could be created from the ground up with equal success.

Unfortunately, on the other side of the coin are the D'Bridge and Frontdoor mailers. Shortly after the agreement was reached, but before the final documentation for the protocol standard was ready, new versions of both programs arrived on the scene (D'Bridge 1.30 and Frontdoor 1.99c). Neither program supported the new standard, and as a result, transfers with SEAdog and TIMS systems were severely impacted (to the tune of 2400 baud effective throughput with a 9600 baud link). These new versions were released in December of 1989, and no new versions have been released since. Rumor has it that both authors have since

seen the light and are working toward incorporating the new standard in their upcoming releases. This should make transfers between all systems go smoothly and stop the endless bickering about which side isn't doing it properly. Let's hope that both authors follow through and make it happen.

Where are FidoNet technology mailers going now? Let's just say "you ain't seen nothin' yet!" With release 2.40 of BinkleyTerm, Bit Bucket Software added a new protocol, in addition to rewriting the existing protocol mentioned above. The new protocol is called Janus, and as Boardwatch Magazine alluded to many months ago, it is a full duplex, streaming protocol. This allows two systems to connect and send mail and files in both directions simultaneously. This is much like the popular Bimodem protocol, but with two major differences: 1) it is specifically designed for use during FidoNet mail transfers, and therefore allows for file requesting if one end is done sending data, and 2) full source code to BinkleyTerm is always released, and other authors can integrate the new protocol (no Bimodem specifications are publicly available).

This is an "experimental" protocol, so full standardized documentation does not yet exist, but the source code at least gives other developers a chance to experiment with the protocol. If Janus remains as reliable as it has been in the first 3 months of release, then a full documentation package will be created.

What else is swimming around in the minds of FidoNet programmers? Domains. This one word describes a concept that makes FidoNet much more capable of reaching the masses than it has ever been. Domains have been an Internet standard for many years, but FidoNet has only recently been introduced to the concept. Domains allow disjoint networks to link together at a single point (a domain "gate") where that one point is the only one that needs to know how to speak to both domains. FidoNet

and Internet have MANY domain gates between them, allowing FidoNet systems to send and receive Internet mail easily. Now however, the concept is expanding to "cultural" networks, as well as networks that use different technology to do their thing (as is the case in the FidoNet/Internet example). There are domain gates between FidoNet and "Network" (a network of FidoNet compatible systems that are family oriented and choose not to be part of FidoNet). There are domain gates between FidoNet and PCRelayNet (the PC-Board equivalent of FidoNet Echomail). The list of domain gates is growing by leaps and bounds. They allow systems to easily communicate without the incredible overhead of having each system being able to talk to every other system. It is a concept that allows the smallest system to have access to any system in almost any network in the world!

Now on to the predictions of where FidoNet technology will be a year from now:

A) All commercial BBS packages will have a FidoNet interface to allow their "hobbyist" customers to link into the FidoNet echomail system. In volume, the FidoNet echomail system transfers more messages than any other network except Usenet. Hobbyist sysops see this resource available, and want to utilize. BBS authors are seeing the light already, and by a year from now, all will have dealt with the problem in some way.

B) FidoNet "point" systems will be more refined. The "point" system is the FidoNet equivalent of the PC-Board off-line mail reader. The "point" technology will be substantially improved a year from now.

C) FidoNet mailers will be able to be installed by novices. As the technology advances, more users wish to utilize it, and the fastest growing segment of that market are the novice users. FidoNet mailers will have to be more understandable than they are today for this group of users to be able to use them.

D) Terminology will be standardized. Right now, the word "network" has many different meanings in relation to FidoNet. That is only one word out of many that are confusing. In order for (C) to happen, the language to describe the process will need to become standardized.

E) Fancier domain gates will be available. Right now several companies run Message Handling System (MHS) gateways for companies that have LAN networks. FidoNet technology access to those gateways will happen, it is only a matter of time. But, those are not the only untapped domains. We're only seeing the tip of the iceberg right now.

F) More microcomputer support BBS's will have echomail support conferences with technical support staff active in them. This trend started years ago when echomail first came on the scene. Unfortunately, at the time it was an immature technology and the pioneer companies that tried it backed off. Now that the technology is so universally available, more companies will be trying this approach. It reaches more people, in a way that is both time and cost efficient (echomail conferences are available on thousands of systems worldwide, each having MANY users, therefore a single support message can theoretically reach many thousands of people that might have a need for the answer).

G) Lastly, a year from now, the days of the "my mailer is better than your mailer" will be over. Rather than choosing a mailer based on its technical merits, the decision will be based more on how the system "feels" while it is running. The technology will be mature enough that all mailers will be equally capable at the technical level, so how it "feels" will become much more important.

How much of this will come true? All of it I hope. Will it all happen in a year? Again, I hope so. Let's reflect on it a year from now and see!

[Bob Hartman is one of three principals behind Bit Bucket Software, publisher of BinkleyTerm, the most widely used mail program in the International Fido Network and quickly becoming the darling of many private corporate mail networks as well. Mr. Hartman also works for eSoft Inc., developer of the TBBS bulletin board system and was integral in the development of eSoft's The Integrated Mail System (TIMS), the first product capable of handling FidoNet mail sessions/file transfers on up to 32 lines simultaneously. - Editor]

COMMUNICATION BASICS

By Alan D. Applegate

I'm excited to be joining the other writers at Boardwatch Magazine beginning this issue. Each month, I'll bring you a focus article on various telecommunications topics, from modem standards to software considerations. My hope is to take complex issues and terminology and make them understandable. I welcome your comments.

DE-MYSTIFYING MODEM ERROR CORRECTION - MNP 4 and V.42

One of the features you often see mentioned in the feature lists of modems is "error correction." Error correction refers to a modem's ability to correct the inevitable telephone line transmission errors before they are even noticed by you or your software. Telephone line impairments, such as electrical interference, cause a normal modem to garble data making screens difficult to read or causing errors during data transfer. Error correction "repairs" these errors automatically.

In order for error correction to work, you must be connected to a compatible error correcting modem. No matter what the capabilities of your modem, if you con-

nect to another modem that does not feature error correction no benefit will be realized. Between two modems, they will automatically negotiate the highest form of error correction/compression supported in common between the two modems.

Error correction capabilities come in two common forms: MNP and V.42.

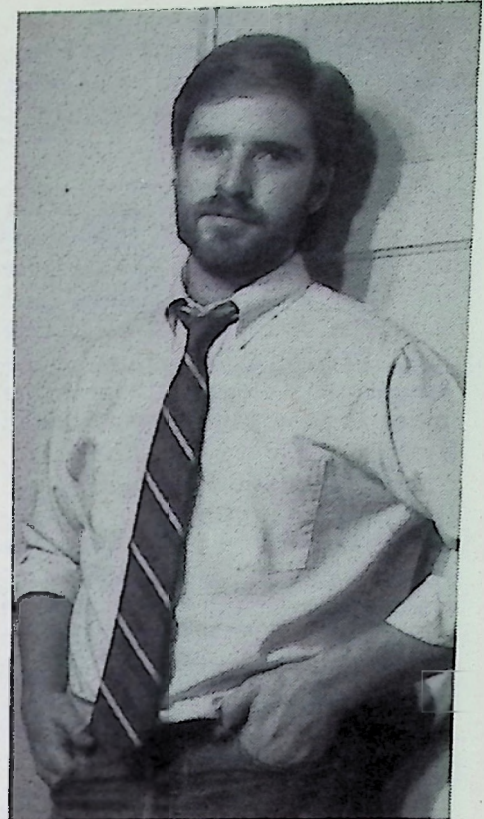
MNP, or Microcom Networking Protocol, was developed by Microcom - a modem manufacturer. MNP itself actually incorporates many different standards which are referred to as "classes." MNP Classes 1, 2 and 3 offer error correction capabilities. MNP Class 4 is often referred to as error correction, but it is actually a performance enhancement mechanism that compensates for some of the data throughput speed lost due to the overhead of performing error correction.

Usually the Classes are referred to in shorthand. For example, MNP Class 4 is called MNP 4, and MNP Class 5 is simply MNP 5.

MNP 1 is called Block Mode. Data can only travel in one direction at a time, not both directions. This is usually referred to as "half duplex". As a result this Class is very slow. It's rarely used today.

MNP 2 is referred to as Stream Mode. It's "full duplex" so data can move in both directions at the same time. Because of the overhead involved in detecting and correcting errors, data throughput is about 84% of the connect rate. This means that a 2400 bps (bits per second) connection will only transmit data at about 202 cps (characters per second) instead of the usual 240 cps.

MNP 3 incorporates MNP 2, and operates in a "synchronous" mode. In this mode, start and stop bits (which I'll discuss in a later column) are stripped from the stream of characters. In addition to correcting errors, Class 3 provides



performance at about 108% of normal, or 259 cps throughput on a 2400 bps connection.

MNP 4 further enhances the performance of the modem; it does not actually correct data itself. An MNP modem will first negotiate MNP 1, 2 or 3. If it is successful it will also attempt to negotiate MNP 4. If MNP 4 is in place throughput will be increased by about another 7% providing throughput of up to 277 cps on a 2400 bps connection with MNP 3 error correction.

MNP modems generally come in two different varieties - MNP 4 and MNP 5. An MNP 4 modem is error correcting only. An MNP 5 modem includes all MNP 4 modem features and adds MNP 5 which is a data compression standard - further increasing throughput. I'll discuss data compression in my next column.

There are other Classes of MNP than 5, currently all the way up through MNP 10, but they are special purpose Classes used in Microcom brand modems. Since MNP through Class 5 has been released to the public domain, modem manufacturers can freely incorporate the techniques into

their modems. This accounts for the widespread use of MNP by many modem makers, and why MNP capable modems are available in all price ranges.

The other main error correction technique is the CCITT V.42 standard. While MNP has become a de facto standard, V.42 was developed by the CCITT - the Consultative Committee on International Telephone and Telegraph. Operating under the auspices of the United Nations, this organization is responsible for the creation of international communications standards, and has members from telephone companies, common carriers, modem manufacturers, and other industry representatives from around the globe. V.42 is a much newer standard but it is rapidly being adopted by many modem manufacturers.

V.42 is more robust than MNP error correction, meaning that it performs the job somewhat more effectively. One advantage of V.42 is that it incorporates MNP 4. This means that an MNP capable modem can connect with a V.42 modem in error correction mode. In addition to MNP compatibility, V.42 features LAP-M - Link Access Protocol for Modems, providing enhanced error correction capabilities. On V.42 to V.42 connections, LAP-M is used instead of MNP type correction.

The default state for error correcting modems (regardless of which standard they support) is off. In order for error correction to work, it must first be enabled through an "AT" command. Once enabled, error correction will operate automatically when calling compatible modems. The actual modem command to enable error correction varies by modem make and model; consult your modem's manual for information. For an error correcting modem to determine whether the remote modem can support correction, it sends a special string of characters, called a "negotiation sequence." This sequence of characters will signal a compatible modem to operate in error correction mode. When connecting with

some modems that don't support correction, the negotiation sequence will cause a slight delay in connecting. The receiving modem without correction capabilities will report a connect immediately, while the calling modem with correction will still be "negotiating." The end result is that some data may seem to "disappear" at the start of the connection. Once actually connected, however, the modems will act normally for the duration of the session. Disabling error correction on the calling modem when dialing systems without error correcting capabilities will remedy the situation.

It should be noted that error correction will change the apparent "feel" of a modem connection, especially at 2400 bps. Rather than characters flowing evenly and continuously across the screen, data will seem to "burst" onto the screen in segments.

The reason for this change is that modem error correction works somewhat like an XMODEM file transfer. Outgoing data is "packetized" - broken into blocks or segments - and sent down the line. The receiving modem analyzes the block, and verifies its integrity. If the block contains a transmission error, a request is made for the sending modem to deliver the same block again. If there is no error, the next block is delivered. Because the data is segmented in this manner, an apparent visual change will occur during error corrected sessions, even if no errors are being corrected by the modems.

Should you purchase a modem with error correcting capabilities? Yes! Error correction adds little to the purchase price of a modem, but provides capabilities that will make your "modem travels" much more comfortable. Screens will no longer be unreadable due to spurious "garbage" characters, and file transfers will proceed more efficiently under adverse conditions. Since many BBS and information hosts have error correction capabilities, your modem's facilities won't often go unused.

When purchasing a new modem, look for models that support the V.42 standard - not just MNP. Although the difference between MNP and V.42 is not overwhelming, V.42 connections have a slightly better "feel" and V.42 is a documented, universal standard, making it a better long term choice.

In summary, error correction provides several benefits, widespread compatibility to realize those benefits, all at a low price.

Next month, we'll discuss another popular modem feature - data compression, implemented by modem standards MNP 5 and V.42bis.

[Alan Applegate can be reached via his bulletin board system *The Short Line* at (303)778-7312. He's also available through CompuServe Information Service at 71621,11, FidoNet at 1:104/36, and Internet at alan.applegate@f36.n104.z1.fidonet.org. - Editor]

WASHINGTON D.C. LIST OF BULLETIN BOARDS

This month, Boardwatch turns the spotlight on our nation's capitol in our ongoing search for the perfect bulletin board system. Washington D.C. offers a tempting target for several reasons.

First, it sports one of the most expertly maintained BBS lists in the nation. For the past several years, **Mike Focke** has updated a monthly list of beltway bulletin boards, always available on Jeffrey Morley's excellent PCBoard system titled *Interconnect BBS* at (703)425-2505. The list actually comes with a software program that allows you to select and output the BBS systems of interest. Our list of 424 Washington D.C. area BBS systems is largely based on Focke's list of BBS, verified, corrected, and augmented by

BOARDWATCH KEEPERS OF THE LISTS

TITLE	TELEPHONE	AREA COVERED	COMPILERS	LOCATION
OASIS	(404)627-2662	Home of Atlanta Bulletin Board List	Robert Orr/Online Atlanta Soc.	Decatur, GA
Deep Thought	(512)244-1598	Home of Central Texas Sysops Assoc. BBS List	Central Texas Sysops Assoc	Round Rock, TX
P.D.S.L.O.	(516)938-6722	Home of THE LIST National BBS List	James Toro	Hicksville, NY
Interconnect	(703)425-2505	Home of Focke's Washington DC Area BBS list	Jeffrey Morley/Mike Focke	Washington, D.C.
Stillwaters	(708)403-2826	Home of Stillwaters Chicagoland BBS List	Colby Jordan /Peter Anvin	Orland Park, IL

Darren Albert, a past technical writing associate currently working the ADA programming scam on the beltway.

Washington D.C. offers several challenges to BBS trackers, not the least of which revolves around telephone service. Washington D.C., our center of government, sports one of the most thoroughly hosed up local telephone situations in the free world. Washington D.C. lies at the juncture of Maryland and Virginia with West Virginia hovering nearby. It is quite reasonable to expect that the extension telephone in your living room, and the other in your kitchen, will not only be serviced by two completely different local Bell operating companies, but you'll likely find the call between the two rooms will incur long distance toll charges.

Despite this, Washington D.C. enjoys a most thoroughly active BBS community. This is a combination of government BBS activity, a technically literate population, and an early history of BBS involvement.

Historically, the Capitol PC User's Group is one of the oldest, largest, and most active user's groups in the country. In July, 1983, Tom Mack of Trumbull Connecticut released one of the first BBS software programs for the IBM PC. His Remote Bulletin Board System for the PC (RBBS-PC) was written in BASIC and quite freely shared in source code. He published the program via the CPCUG Software Exchange and it quickly became the most widespread package in the nation. CPCUG itself continues a very active online role with several systems in operation. You might try

their 9-node visitors board in Rockville Maryland at (301)738-9060. They still serve as one of the best places for new computer users to start gaining information on computer use.

Tom Mack is not particularly active in ongoing development of RBBS-PC. That has largely been taken over by Jon Martin of Concord California and Ken Goosens of Fairfax Virginia. Ken operates **YOUR PLACE #1** in Fairfax at (703)978-6360 in the Washington D.C. area and continues support of the program.

RBBS-PC currently suffers from both age and the limitations of the BASIC language it was created in. Across the land, RBBS systems are gradually converting to more recent entries in the genre, most notably PCBoard. PCBoard was also originally written in BASIC by Fred Clarke, who had made some contributions to RBBS-PC and despite Clarke's vehement claims to the contrary, the similarities between the two programs and their common roots are almost universally recognized. PCBoard is probably the most popular BBS software for hobby BBS systems across the nation, but RBBS still lays claim to the most commonly used software title in the capitol itself. A breakdown of Washington is illustrative. Of 424 systems:

WASHINGTON, D.C. Area BBS by Software

RBBS-PC	90	21.23%
PCBoard	81	19.10%
Wildcat!	44	10.38%
Opus	30	7.07%
WWIV	24	5.66%
Searchlight	23	5.42%
GT Power	16	3.77%
TBBS	13	3.06%
TCOMM	11	2.59%
Fido	11	2.59%
The Major BBS	10	2.36%
Remote Access	8	1.89%
Rover	7	1.65%
Spitfire	4	<1%
Teleguard	4	<1%
Other	39	9.20%

Some other statistics worth noting. A total of 100 (23.58%) of the 424 systems in the capitol support 9600 bps connections and 63 of those use U.S. Robotics modems. This is 10-12% below the national average and compares to the 36.55% reported last month in our Chicago list. A total of 308 systems (72.64%) continue supporting 2400 bps as the top speed. Approximately 74 of the 424 systems participate in local FidoNet 109, slightly over 17% of the total. The lower percentage of systems supporting 9600 bps and popularity of the older RBBS software package would seem to indicate Washington lags other U.S. cities slightly in the technology game, probably due to its maturity as a city of early

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adopters of BBS technology some years back. That same maturity is also exhibited in the broad creativity in BBS application in the area.

Another element contributing to the popularity of BBS systems in the Washington area is the participation by Uncle Sam the Sysop in the community. The federal government operates a number of fascinating services there. The U.S. Naval Observatory provides a time mark based on their atomic clock at (202)653-0351 where you can synchronize your PC clock as well as an informational BBS at (202)653-1079. The U.S. Department of Commerce operates a 32-line TBBS system titled **Economic Bulletin Board** at (202)377-3870 providing detailed economic data such as GNP, CPI, Labor and Employment Data, Housing Starts, etc. The U.S. Department of Education provides a fascinating educational research BBS at a toll-free (800)222-4922 with education stats back to the turn of the century. Other government systems are operated by the IRS, the FCC, the Census Bureau, Commerce Department, Export/Import License info, info for Federal Librarians, the U.S. Navy, NASA, and the National Science Foundation.

Special focus systems are particularly well developed in Washington. We found it both interesting, and a sign of our times, that in the same city as the Department of Education OERI BBS, you can find another devoted to educating your children at home (HUG BBS). Two handicapped individuals met on one of the nations oldest BBS devoted to handicapped issues (HEX), married, and started their own BBS devoted to Birdwatching (Osprey's Nest). There are systems specifically devoted to Mercedes Benz motorcars, coin collecting, genealogy, crimes against children, Cajun recipes, horses, head and neck surgery, bicycling, UFOs, radio-controlled models, the 12-step programs used to battle compulsive/addictive behavior, the Hubble space telescope, environmental issues, Corvettes, horses, horticulture, Scherlock Holmes, Scottish/American heritage issues, and the politics of Lyndon LaRouche. The user group thing has really caught on with resource boards for R:Base, dBASE, revelation, Autocad, Windows, and a host of other software programs available.

Entries in our bizarre "what's in a name" game include Mosquito Coast, Pig Pen, Reality Check, 3 Winks, Lucky's Looney Bin,

Humpty's Place, and the winner, beating out Horse Shift by a single extraneous character - **Genuine Aloha Ukelele**. You could have thought of that one eh?

BOARDWATCH KEEPERS OF THE LISTS

With this issue, we begin our first Boardwatch Keeper's of the Lists panel containing listings of electronic bulletin board systems across the land that put for a little extra effort for the rest of us in the online world by maintaining verified lists of electronic bulletin boards. Note that it is impossible to maintain a 100% accurate BBS list, but all boards listed make regular attempts to verify all numbers listed. By dialing one of these boards, you can download the regional list they maintain locally.

STOCK OF THE WEEK

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BOARDWATCH MAGAZINE

WASHINGTON DC AREA LIST OF ONLINE SERVICES

TITLE	TELEPHONE	DESCRIPTION	SOFTWARE	MODEM	LOCATION
386 * Citizen	202 574-4663	No.Info	RBBS	2400	Washington DC
3Winks #1 (S. Staten)	301 670-9621	HAM Radio/Geneology FidoNet 109/418	RBBS	9600V.32	Rockville
A Dark Night	704 425-7201	No.Info	Teleguard	2400	Fairfax/Vienna
A La Modem (L. Dye)	703 358-5360	Yorktown High School	Wildcat!	2400	Alex/Arling
Abbey Road (W. Kraslawsky)	703 620-3271	Messages - No beatlemanla - 109/338	Wildcat!	9600.HST	Fairfx/Vienn
ABYSS (S. Rose)	703 823-6591	ParaNet-MagickNET-FidoNet 109/134	Remote.Acc	9600	Alex/Arling
ACOGMET	202 479-0005	Genetics Professionals	RBBS	2400	Wash DC
ADAIC DOD ADA Language	703 614-0215	No.Info	RBBS	2400	Arlington
Addict's Attic (LeGuellec)	301 428-8998	FidoNet 109/420&423	Opus	9600.HST	Gaithersburg
Adult*Bliss	703 642-8464	No.Info	Malor.BBS	2400	Fis Ch/McLn
Advanced Data Services	301 217-9544	1.7 GB - 12 nodes - 158 conferences	PCBoard	2400.MNP	Frederick
AFSC MCCR	301 735-8124	FidoNet 109/523	Opus	2400	Cap Heights
Afterlife	301 907-4659	Fun and Games	WWIV	2400	Kensington
Alexandria Link (P. Pluto)	703 799-5650	Adult Conference (\$) - ace	Wildcat!	2400	Alex/Arling
ALF	301 344-8510	Agriculture Library g MNP	RBBS	9600.HST	Berwyn
ALIX II	202 707-9656	Library Consortium	TBBS	2400	Wash DC
Aloha Eden	703 979-8823	Aliases Required	WWIV	2400.MNP	Alex/Arling
AMateur RADIO (Kesteloot)	703 734-1387	No.Info	PCBoard	2400	Fis Ch/McLn
ARGEN (T. Cooper)	703 385-6962	19 conferences -	PCBoard	2400	Fairfx/Vienn
Arlington S/W Exchg	703 532-5568	DOS and CPM interests	PCBoard	2400	Fis Ch/McLn
Around & About (D. McCrory)	301 621-9669	No.Info	GTPower	9600.HST	Bowie
Ashton-Tate	703 591-0506	No.Info	NA	2400.MNP	Fairfx/Vienn
Atavachron (T. Stewart)	301 953-3945	R/C Modeling - Aviation - Space	WWIV	2400	Laurel
Barneysville	703 528-0124	Programming interests - 120 megs	Teleguard	9600HAYE	Alex/Arling
BBS Lawrenceville	703 533-3938	MAC - showbusiness -	NA	2400	Fis Ch/McLn
BBS Mumps	301 948-6825	Micronetics MUMPS Language	RBBS	2400	Rockville
BBSIAPL (D. Holt)	301 384-3672	APL programmers - not an Apple board	TCOMM	2400	Layhill
Bear's Den	703 671-0598	FidoNet 109/101	Fido	2400	Alex/Arling
BearFacts	703 323-9434	Lake Braddock High School	PCBoard	9600Fast	Fairfx/Vienn
Beda Board (P. Beda)	703 893-8262	Microsoft Windows - 95 conferences	PCBoard	2400	Fis Ch/McLn
Bendix Users Group	301 794-9036	FidoNet 109/402	Opus	2400	Bowie
Bethesda Chevy Chase	301 657-4944	BCC High School	Searchligh	1200	Bethesda
Between The Lines	202 885-2728	Writers - American University	Wildcat!	2400	Wash DC
Bikini Atoll	301 949-0748	No.Info	WWIV	2400	Kensington
Bit Bucket (G. Padron)	301 384-8751	No.Info	Splitfire	2400	Layhill
Bit-Stream (D. Sward)	301 654-2969	FidoNet 109/999 Programming	Searchligh	2400	Bethesda
Black Moon Rising	703 263-0508	On-Line Games - Adult files/pics	Opus	2400	Hemdon
Blanche's Place \$	202 547-9270	Oldest Adult BBS on East Coast 6 Ins	NA	2400	Wash DC
Bland Land	301 441-2008	Psychology-Chaos Theory-Children	Rover	2400	Berwyn
Blue Devil (B. Fein)	703 759-0578	multi-node	PCBoard	9600V.32	Fis Ch/McLn
Board On Boards (Shockley)	703 264-9698	Communications Specialty BBS 109/337	Remote.Acc	9600.HST	Fairfx/Vienn
Bob's #1 (B. Allen)	703 271-9036	FidoNet 109/145	Wildcat!	2400.MNP	Arlington
Bob's Board (Schroeder)	301 649-5065	No.Info	RBBS	2400	Kensington
border (B. Berglie)	703 527-3592	No.Info	Searchligh	2400	Alex/Arling
Brassworx	703 715-0092	FidoNet 109/339	Fido	2400	Vienna
Brewster's Barn	703 352-1502	FidoNet 109/310	Opus	9600.HST	Fairfx/Vienn
Bug BBS	301 794-9036	BENDIX Employee BBS	Opus	2400	Seabrook
Bullet'n Board (T. Metaksa)	703 971-4491	Nat'l Rifle Association Issues	RBBS	2400.MNP	Alex/Arling
BXR ISFUG (M. Crockford)	703 756-6109	IRS User Group	RBBS	2400	Alex/Arling
Byrd's Nest #1 (A.&D.Byrd)	703 671-8923	Desktop Pub - Wildcat! BBS Sales!	Wildcat!	9600.HST	Alex/Arling
C D & J (H. Jacobs)	301 336-7129	Electronics	RBBS	2400	Cap Heights
C-Business (D. Newell)	703 207-9119	C Language Programmers - LANs	RBBS	2400	Merrifield
CAD Network (R. Goulet)	703 450-1697	CAD Users Group - AutoCAD Files	RBBS	2400	Fairfx/Vienn
CapDUG (K. LaCapria)	301 292-7955	Capital Public Domain UG 109/412	Opus	2400	Oxon Hill
Capital Area Net (R. Wood)	301 499-4671	GT Area Network Hub	GTPower	9600.HST	Cap Heights
Capital Conn (B. Shuck)	703 280-5490	Multi-node - HAM Radio - s	PCBoard	9600Fast	Fairfx/Vienn
Capitol Systems	301 953-7557	No.Info	WWIV	2400	Laurel
Captain's Call (R. Mason)	703 455-2697	No.Info	Wildcat!	2400	Engleside
Cascades (N. Moschkin)	301 649-1050	Star Trek-109/427 - Rodentware S/W	Remote.Acc	2400	Kensington
CCIB Cyclan TBBS	703 866-3739	FidoNet 109/329	TBBS	2400	Fis Ch/McLn
Census Bureau (N. Frankel)	301 763-4576	No.Info	RBBS	2400	Cap Heights
Census Bureau Personnel	301 763-4574	No.Info	RBBS	2400	Cap Heights
Center For Fire Research	301 921-6302	Fire Fighting interests	TCOMM	2400	Rockville
Centerville (S. Crossland)	703 830-4298	RC Aviation - Good Library	RBBS	2400	Braddock
Centmar Corridor (S. Maley)	301 621-7275	FidoNet 109/526 teen and adult areas	TBBS	9600.HST	Bowie
Chevy Chase (B. Larkins)	703 549-5574	Japan Conference netted to Tokyo	PCBoard	2400	Alex/Arling
Chipin Block (C. Sandage)	703 685-0815	Games - InterLink	PCBoard	2400	Alex/Arling
Chips 'n Dip (R. Klein)	301 588-9465	Now a second node of Mystery	GTPower	9600V.32	Silver Spmg
CHUG Heath/Zenith (Heintze)	703 550-9164	Capital Heath Users Group 109/107	Fido	2400	Alex/Arling
Chug's Opus BBS (R. Heintz)	703 550-9164	Capital Heath/Zenith User Group	Opus	2400	Alexandria
Church Without Walls	202 966-2824	Religion/Politics/Ethics/Bible	Opus	2400	Wash DC
Cluster (J. DeCarlo)	703 448-0926	Bowling and Cooking FidoNet 109/131	Opus	2400	Fis Ch/McLn
Col's Board (B. Clarke)	703 241-7951	New Is Silver; Old Is Gold.	GTPower	2400	Fis Ch/McLn
Collision Theory (J/K Mann)	703 503-9441	Music and Programming Interestse	QuickBBS	2400	Spcl Service
Commerce Dept	202 377-1423	Planning and Budget	RBBS	2400	Wash DC
Comp Connect (R. Blacher)	202 547-2008	DOS& UNIX; utils and programming	PCBoard	9600V.32	Wash DC
Computer Classifieds	301 843-9033	Classified Ads	Wildcat!	2400	Oxon Hill
ComputeRecycler	301 858-7049	Computer Ads for \$ -	TBBS	2400	Bowie
Condor (S. MacAdams)	301 621-9864	No.Info	PCBoard	2400	Bowie
Connect 19.200 (K. Compton)	703 690-7361	Author of PCRelay/MegaMail	PCBoard	9600.HST	Lorton
CONTECH (R. Schnlebolke)	301 340-2212	dbase III/IV	PCBoard	2400	Rockville
CONTECH BBS	301 340-2212	Custom DBASE Conference	PCBoard	2400	N. Patomac
Coral Reefer	703 264-3962	Adult - Graphics - AARGHInet	WWIV	9600.HST	Fairfx/Vienn
Corvette Drivers (D.Arline)	703 742-6279	Great Graphics 1.4 GB files	PCBoard	9600V.32	Fairfx/Vienn

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WASHINGTON D.C. AREA LIST OF ONLINE SERVICES

TITLE	TELEPHONE	DESCRIPTION	SOFTWARE	MODEM	LOCATION
Cosmic Wanderings	703 256-8149	.Adult - GIFs - Games - Discussions	TPBoard	2400	Fis Ch/McLn
CPAFUG (B. Bennett)	301 989-8960	.PAF - Genealogy FidoNet 109/422	RBBS	2400	Layhill
CPCUG Member Info eXchg	301 738-9060	.Capital PC Users Group Members 9node	RBBS	9600.HST	Rockville
CPCUG Member Info eXchg	703 750-0431	.Capital PC Users Group Members	RBBS	9600.HST	Fis Ch/McLn
Craig's Place (C. Vaughan)	703 241-5492	.MAC Programming FidoNet 109/342	RBBS	2400	Fis Ch/McLn
Crystal Aerie	703 415-0134	.Model Railroad/MAC files/Music	Rover	2400	Alex/Arling
CSRC	301 948-5718	.Computer Security	RBBS	2400	Rockville
Cyanide Alley	202 225-4137	.No.Info	WWIV	2400	Wash DC
CyberChurch (L. Rice)	202 269-2547	.FidoNet 109/147	Opus	2400.MNP	Wash DC
Cydones Spin	703 351-9173	.FidoNet 109/225 MAC	NA	2400	Fis Ch/McLn
Darkness III (A. Hoffman)	703 768-2751	.FidoNet 109/143 visually Impaired	Opus	2400	Alex/Arling
Darwin (P. Olympia)	301 251-9206	.dBASE III/IV - Clipper - Foxpro	PCBoard	9600.HST	Rockville
DASC-ZSA (G. Edsall)	703 274-5863	.Defense Logistics Agency	PCBoard	2400	Arlington
Data Bit #1 (K. Flower)	703 719-9648	.Multi Node 200 conferences -	PCBoard	9600.HST	Alex/Arling
Data Connection (R. Cramer)	703 506-8598	.RelayNet	Wildcat!	2400	McLean
Data Flex (J. Amen)	301 805-1229	.Hubble Space Telescope - DBASE	Searchligh	2400	Bowie
DataGate (J. Gerardi)	301 948-8332	.No.Info	PCBoard	9600.HST	Rockville
DC Follies (J. Woodall)	202 232-3379	.Current Affairs Monthly Topic	Splitfire	2400	Wash DC
DC Govt (D. Weiss)	202 727-8668	.Government Political Discussions	Fido	2400.MNP	Wash DC
DC Info Exchange (B. Walsh)	202 433-6639	.Conferences	PCBoard	9600.HST	Wash DC
DC Signals (B. Ashe)	202 546-3633	.No.Info	Rover	2400	Wash DC
DCUPC (B. Lee)	301 699-5299	.12pm-5pm	GTPower	2400	Hyattsville
Dead End (J. Bisson)	703 821-7544	.No.Info	Wildcat!	2400	Fis Ch/McLn
Deathstar #1 (L. Pollard)	301 839-0705	.Procomm - AT&T - Multinode	RBBS	96Microc	Oxon Hill
Debi's Place (M. & D. Isaac)	301 870-5963	.Poetry - Online Games- Security	RBBS	2400.MNP	Oxon Hill
Deep Thought	301 270-1360	.Philosophy Conference	PCBoard	2400	Silver Sprng
Dept of Education OERI	800 222-4922	.Dept of Educational Research	RBBS	2400	Washington
Dept of Education OERI #1	202 357-6011	.Dept of Educational Research	RBBS	2400	Wash DC
DGS Systems Alpha (Snyder)	703 323-6423	.Author of DGS mods to RBBS -	RBBS	9600.HST	Fairfx/Vienn
Digital II (C. Chapman)	703 444-6765	.1 gig of files	PCBoard	9600.HST	Herndon
Dimension II	703 356-1370	.No.Info	WWIV	2400	Fis Ch/McLn
Dingo's Doghouse	301 983-3902	.No.Info	WWIV	2400	Rockville
DNA Data Exchange (Chesley)	703 325-1219	.DNA Employee/Personnel	Teleguard	2400	Alex/Arling
DOD Export License I	703 697-8109	.No.Info	RBBS	2400	Arlington
Dragon's Lair II	703 273-1327	.No.Info	Searchligh	2400	Fairfx/Vienn
Duckworld (J. Laasch)	301 621-7041	.No.Info	PCBoard	2400	Bowie
Duke's Domain	202 363-0364	.No.Info	WWIV	9600.HST	Wash DC
Dynamic Duo	703 425-4506	.FidoNet 109/304	RBBS	2400	Fairfx/Vienn
E-ISO - In Search Of \$	703 471-5581	.Electronic Dating Service - 5 nodes	Wildcat!	2400	Fairfx/Vienn
Earth Stream (D. Smith)	202 544-1554	.Environmental Issues - Earth Day	Wildcat!	2400	Wash DC
East Coast Forth (J. Shifrin)	703 442-8695	.Forth Language/Topics/Files	PCBoard	2400	McLean
East Coast Pub Net	703 538-6540	.Info Xchg for Writers/Graphic Artist	PCBoard	2400	Fis Ch/McLn
ECCO-Line	703 971-5757	.Epson Capital Computer Organizationn	QuickBBS	2400	Alex/Arling
Economic Bulletin Board	202 377-3870	.U.S. Dept of Commerce Econ Stats	TBBS	2400	Springfield
Eldrich Blvd	703 931-0431	.No.Info	WWIV	2400	Alex/Arling
Electronic Age (M. Benson)	703 620-0851	.Windows - GIFs - Telecomm	Rover	2400	Fairfx/Vienn
Electronic Shopper	301 530-5962	.Ads for 5 stores available	Wildcat!	9600.HST	Bethesda
Elite Few (G. Laufer)	703 765-4539	.Intellectual Conversations	TBBS	2400	Alex/Arling
Enchanted Isle (F. Gotay)	703 560-5059	.No.Info	RBBS	2400	Fis Ch/McLn
Energy Info Admin E-Publs	202 586-8658	.Petroleum/Coal/Electricity Stats	??	2400	Washington
ENIAC (C. Peters)	301 460-9134	.International MIDI Net echo	Opus	2400	Kensington
Enlightened (B. Feist)	703 370-9528	.11pm-5pm Programming Interests	GTPower	2400	Alex/Arling
Enlightenment (S. Brin)	301 209-9250	.type dis to get to discussions	RBBS	2400	Hyattsville
Entropy Effect	301 270-8268	.No.Info	WWIV	2400	Silver Sprng
ENVIRO (K. & L. Riegel)	703 524-1837	.EP-Ecology-Wilderness-Endangered	RBBS	2400	Alex/Arling
ETSA-ELISA1 (D. Orwig)	202 697-8109	.Export/Import License Info	RBBS	2400	Washington
Fairchild Consulting	202 364-9463	.No.Info	TCOMM	2400	Wash DC
Fairfax Co Public Schools	703 321-2839	.Educational Info Exchange	Major.BBS	1200	Fis Ch/McLn
FCC BBS	301 725-1072	.Federal Communications Commission	?	2400	Washington
FCPF (J. Allison)	703 591-4287	.Fairfax County FireFighters 496	RBBS	9600Fast	Fairfx/Vienn
FDIC (R. Campbell)	202 371-9578	.Banyan conference	RBBS	2400	Wash DC
FEBBS (C. Shea)	202 366-3764	.Federal Highway Admin - 4 nodes	TBBS	2400	Wash DC
Fed Energy Reg Commiss	202 208-1397	.Commission Issuance Posting	RBBS	2400	Wash DC
Felding	703 355-7047	.No.Info	RBBS	2400.MNP	Mount Vernon
Final Option (C. Wilson)	703 451-0457	.No.Info	Wildcat!	2400	Fis Ch/McLn
FMOC BBS (J. Bomberger)	703 524-4159	.Ft Myer's Officer's Club	PCBoard	2400	Alex/Arling
Foundation (S. Howell)	301 935-4941	.Blind SysOp - Disabled - 109/521	Searchligh	9600.HST	Berwyn
Fred's Board (F. Meltman)	703 841-0959	.British Cars-Gardening-Trains	PCBoard	9600.HST	Alex/Arling
Free Spirit #1 (T. Briscoe)	301 283-0917	.Multi Node FidoNet 109/132	Searchligh	9600.HST	Oxon Hill
Friends Forum	301 217-3913	.Friends of the Mont Co Library	RBBS	9600.HST	Rockville
Gabbs	301 428-7254	.No.Info	Searchligh	2400	Gaithersburg
Galleria (M. Gibson)	703 352-3534	.Adult	Wildcat!	9600.HST	Fairfx/Vienn
Gannett	703 524-3982	.Utility Downloads - MAC files	PCBoard	2400	Alex/Arling
Gemini's Playhouse	202 399-7080	.adult areas	Remote.Acc	2400	Wash DC
Generation V \$	301 680-9300	.Progr Journal Mag/Downloads/700+MB	Mailnet	2400	Bethesda
Genuine Aloha Ukelele	703 960-8428	.UNIX Sys V	Citadel	2400	Alex/Arling
Geoclock (J. Ahlgren)	703 241-7980	.Support for Geoclock map/sunlight	RBBS	2400	Fis Ch/McLn
Geological Survey	703 648-4168	.CD Rom conference	PCBoard	1200	Fairfx/Vienn
GLIB	703 578-4542	.Gay/Lesbian Issues - 11 lines	TBBS	2400	Alex/Arling
GMutant (W. Grotophorst)	703 323-3100	.George Mason University Library	Wildcati	2400	Fairfx/Vienn
Grey Eagle (K. Taylor)	703 534-0177	.Genealogy-History-Cooking-109/312	Opus	2400	Fis Ch/McLn
Greystone Manor (B. Harper)	301 773-0822	.No.Info	Splitfire	2400	Hyattsville
GSA IRSC	202 501-2014	.GSA Schedules...	CTUS	2400	Wash DC
GTSI (J. McKeown)	703 631-3463	.Product Info/Demos for Governmentfor	TCOMM	9600HAYE	Fairfx/Vienn
Handiline (J. Mountain)	703 536-2052	.Disability info - HiRes Graphics	RBBS	2400	Fis Ch/McLn

BOARDWATCH MAGAZINE

WASHINGTON D.C. AREA LIST OF ONLINE SERVICES

TITLE	TELEPHONE	DESCRIPTION	SOFTWARE	MODEM	LOCATION
Hanger 6	703 841-0393	.Aliases	WWIV	2400	Alex/Arling
HardCore (J. Saminis)	202 364-6199	.Aliases	NA	2400	Wash DC
Harley Hackers	301 464-4514	.Adults Only	Searchligh	2400	Bowie
HBX TCOMM (R. Moreau)	703 471-8010	.Bridge Conference - FidoNet 109/316	TCOMM	9600Fast	Fairfx/Vienn
HCSI - PROBAS	301 953-7738	.Commercial QuickBasic routines	PCBoard	2400	Laurel
Helm's Deep	703 437-3419	.Adult - Philosophical - D&D	RBBS	2400	Hemdon
HerbLink II	202 667-7335	.Aliases Encouraged	Searchligh	2400	Wash DC
HEX - Handicapped	301 593-7357	.593-7033 TD (for deaf)	NA	1200	Silver Sprmg
Hiram's Oasis	703 938-4990	.Info about Freemasons and Shriners	RBBS	9600.HST	Fairfx/Vienn
Hls Master's Voice	703 768-6197	.FidoNet 109/343 - many adult areas	Remote.Acc	9600V.32	Alex/Arling
Home Education UsersGroup	301 937-2303	.03pm-04am	RBBS	2400	Berwyn
Horse Shift (R. Egebrecht)	301 681-3286	.Horse Shows and Horse Talk	Wildcat!	1200	Silver Sprmg
Hortline (M. Neff)	703 836-2418	.Horticulture	PCBoard	2400	Alex/Arling
HRCF-NET (R. Jackson)	202 639-8735	.Human Rights Campaign Fund - Gay/Les	QuickBBS	2400	Wash DC
HUG BBS (J. Mayor)	301 937-2303	.Home Education/Educational Games	RBBS	2400	Beltsville
Humpty's Place	703 237-8122	.No.Info	Teleguard	2400	Fis Ch/McLn
IBM XT Clone (R. Utley)	301 921-4906	.No.Info	RBBS	2400	Rockville
ICN Zone (J. MacDiarmid)	703 550-5041	.FidoNet 109/324	Opus	2400.MNP	Alex/Arling
Idea Link	301 949-5764	.Tech In society/FidoNet 109/432	PCBoard	2400	Kensington
Imad-ad-Dean	301 656-4714	.Libertarian Party - Islam - 109/434	Opus	2400	Bethesda
In Pursuit Of PC Pursuit	703 689-2987	.Info on Long Distance Phone Service	Fido	2400	Hemdon
Indirections (S. Overton)	703 971-1783	.Sherlock Holmes/writers 109/135	Wildcat!	2400	Alex/Arling
InfliNetwork	301 498-6183	.Multi-line	Major.BBS	2400	Laurel
Infinite Perspectives	301 924-0398	.FidoNet 109/519 - Desktop Publishing	Remote.Acc	9600.HST	Layhill
Info Exchange (C. Caldwell)	703 354-1104	.FidoNet 109/319	Opus	9600.HST	Fis Ch/McLn
Info*Share \$	703 803-8000	.No.Info	FA	2400	Fairfax
Inst Biological Science	202 628-2427	.American Foundation for Bio Sciences	TBBS	2400	Wash DC
Instant Recall	301 530-2890	.IEEE Expert Systems Task Group	Major.BBS	2400	Bethesda
Interconnect (J. Morley)	703 425-2505	.Focke's Washington DC BBS List	PCBoard	9600V.32	Fairfx/Vienn
Intercourse (N. Glarratana)	703 764-0512	.Women Only SubBoard ea	Searchligh	2400	Alex/Arling
ISEC-ASQB-QAB (T. J. White)	703 355-2664	.US Army - Info Services - QA	TCOMM	2400	Mount Vernon
Issue Dynamics#1 (S. Simon)	202 408-1163	.Telecommunications Issues -	RBBS	2400	Wash DC
ITC Energy/Chemical	202 252-1948	.Quarterly SOC Reports only	RBBS	2400	Wash DC
ITL Online (P. Sullivan)	703 550-1086	.Clone Maker	RBBS	2400	Alex/Arling
JAGNET (S. Bartlett)	703 325-0748	.Judge Advocate General Net-Oracle	PCBoard	2400	Alex/Arling
Jewel of the Nile (P. Patel)	703 323-3233	.GMU chapters of AFCEA and IEEE	Searchligh	2400	Fairfx/Vienn
Jim's Dream (J. Wall)	202 581-1422	.RELAYNET 'RIME' - many online games	PCBoard	2400	Wash DC
Job Search	301 681-5331	.No.Info	PCBoard	2400	Silver Sprmg
Joe's Place (J. Havlock)	703 406-7831	.Over 9000 files on CD-Rom 109/227	RBBS	9600.HST	Fairfx/Vienn
JP's Place (JP Palazzolo)	703 237-5786	.No.Info	RBBS	2400	Fis Ch/McLn
Jr (J. Perlens)	301 468-0984	.PC Jr Users Group	RBBS	2400	Kensington
K & R (R. Maya)	703 641-9218	.No.Info	Wildcat!	2400	Fis Ch/McLn
Kandle Data Products	301 937-7599	.No.Info	RBBS	2400	Berwyn
Ken's Place (K. Long)	703 920-6550	.No.Info	Searchligh	2400.MNP	Alex/Arling
Kevin's Watch	703 379-9611	.A Place to Play..GWAR/other Aliases	WWIV	2400	Alex/Arling
Kingdom of Dead	703 866-7055	.No.Info	NA	2400	Fis Ch/McLn
Kiss (W. Sanusac)	703 644-1009	.Hardware Knowledgeable Sysop -	PCBoard	9600V.32	Fis Ch/McLn
KOH (P. Ferguson)	202 275-1050	.GAO Project	Wildcat!	2400	Wash DC
KWIBBLE #1 (R. Hannah)	703 243-4820	.LAN - Clipper -	PCBoard	2400.MNP	Alex/Arling
Lankhmar	703 360-4973	.No.Info	WWIV	2400	Alex/Arling
Leprechaun Heaven (Porter)	202 234-7349	.30+ online games - Echo Mail 109/	GTPower	2400	Wash DC
Liberty Hall #1 (F. Dorer)	703 255-1285	.Teen - Fairfax County -	RBBS	2400	Fairfx/Vienn
Life's Like (J. Burns)	703 560-5616	.HST mode set so no V.32 at 9600	PCBoard	9600.HST	Fis Ch/McLn
Lighthouse (L. Nemec)	301 248-5540	.11pm-04pm FidoNet 109/517	Searchligh	2400	Oxon Hill
Lincoln Legacy (Greenberg)	703 689-1357	.Lyndon LaRouche politics	PCBoard	9600.HST	Hemdon
Lost Paradise (M. King)	703 370-7795	.No.Info	Wildcat!	2400	Alex/Arling
Lotus' Federal	703 527-2282	.No.Info	Major.BBS	2400	Alex/Arling
Lucky's Looney Bin	703 938-9738	.Echo Exchange and SNUBBS - 109/112	NA	9600.HST	Fairfx/Vienn
MAC Den (C. Tuma)	703 759-7038	.FidoNet 109/330	MAC	2400	Fis Ch/McLn
MAC Net	703 860-1427	.FidoNet 109/328	MAC	2400	Hemdon
Main Frame (A. Bilski)	301 654-2554	.Since 1984 - Multi-Node	PCBoard	9600V.32	Bethesda
Management Consulting #1	301 652-3251	.System Utilities and Accounting S/W	PCBoard	9600.HST	Bethesda
Market (A. Sislen)	301 299-8667	.Stock Market and Investing	PCBoard	9600.HST	Rockville
Mars Hotel - Minix	301 277-9408	.UNIX variant	Quartet	2400	Hyattsville
Martin's Mortuary	703 237-5650	.No.Info	QuickBBS	2400	Fis Ch/McLn
Match-Up League	703 920-0548	.Football Pool	PX	2400	Alex/Arling
Matrix City (B. Parrish)	703 841-1246	.No.Info	WWIV	2400	Alex/Arling
Maul Bum's Beach Paradise	703 532-8846	.No.Info	Wildcat!	2400	Fis Ch/McLn
Max's Doghouse (J. Salemi)	703 548-7849	.Home of CPAA; OS/2 Shareware 109/136	TCOMM	2400	Alex/Arling
Medulink (F. Cuccias)	703 281-0023	.Catholic Interests	GTPower	2400	Fairfx/Vienn
Mega Chips (R. Gallagher)	301 422-2330	.No.Info	Wildcat!	2400	Hyattsville
Mega Zone 23	301 762-3071	.7pm - 7am weekdays	WWIV	1200	Rockville
Megalomania	301 855-1612	.No.Info	WWIV	2400	Marlboro
Megawatts (B. Birnbaum)	301 353-5059	.300 megabytes of file space	RBBS	9600.HST	Rockville
Message Exchange (P. Venn)	301 855-0339	.New Metro Line to Calvert Co 109/220	TBBS	9600	Marlboro
Metal Menagerie	703 768-8179	.Aliases Encouraged - Music Oriented	WWIV	2400	Alex/Arling
Metro Net (R. Doss)	202 475-7543	.Military District of Washington	PCBoard	9600HAYE	Wash DC
Metro-Link (Smith/Sato)	703 765-5407	.FidoNet 109/119	QuickBBS	2400	Alex/Arling
MIBBS (J. Shea)	202 586-1561	.DOE Minority Energy Info Clearing	RBBS	2400	Wash DC
Micro C \$ (A. Smokier)	703 321-8070	.MS-DOS and CPM files	RBBS	2400.MNP	Fis Ch/McLn
micro*LINE (M. Younts)	703 425-7451	.Multi Node	Major.BBS	2400	Fairfx/Vienn
Midi Thru (S. Jones)	301 384-0351	.Electronic Music - MIDI 109/410	QuickBBS	9600V.32	Layhill
MIDI Users Group (M. Rivers)	703 532-7860	.Computer Music Interface	PCBoard	2400	Fis Ch/McLn
Midnight Blue (S. Tripp)	301 855-2592	.Multi-node - BiModem - Scrabble	Wildcat!	2400	Marlboro
Midnite Rider (J. Reeves)	703 591-5744	.Amateur Radio - RC - Football Pool	PCBoard	9600.HST	Fairfx/Vienn

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TITLE	TELEPHONE	DESCRIPTION	SOFTWARE	MODEM	LOCATION
MOFEX (D. Truong)	703 444-1732	Home of ConscienceWare - Magic	PCBoard	2400	Hemdon
Money Matters (B. Smith)	202 737-1086	Banking Industry Focus	Searchligh	2400	Wash DC
Morgue (M. Stanton)	301 718-9458	No.Info	Searchligh	2400	Bethesda
Mormac	703 709-9381	FidoNet 109/348 Macintosh	NA	2400	Fairfax
Mortar Board (R. Precup)	703 525-3265	History/Music/Office Football Pool	RBBS	2400	Alex/Arling
Mosquito Coast (V. Lowe)	703 941-2942	Enter/Concerts-Writers-Science	NA	2400	Fis Ch/McLn
Mounier's	703 256-2564	White Oaks Elementary School teacher	Major.BBS	2400	Fis Ch/McLn
MSG-RBBS David Taylor #1	301 227-1042	No.Info	RBBS	2400.MNP	Bethesda
Music Net Music Magazine	301 946-6796	Music Press/Shows/Reviews/MIDI/	Wildcatl	2400	Kensington
My BBS (C. Yates)	301 881-1481	80 conferences!	PCBoard	9600.HST	Kensington
My Little BBS (J. Gentzel)	703 658-0250	Doors and Games Unlimited Downloads	Wildcatl	2400	Fis Ch/McLn
Mystery (R. Klein)	301 588-8142	60 netmalled conferences-Multi Node	GTPower	9600.HST	Silver Spng
NAAOEC IMD Network	301 871-8349	Crimes Against Children Info -	Wildcatl	2400	Kensington
NADAP (L. Rollins)	703 693-3831	Navy Drug /Alcohol programs	Wildcatl	2400	Arlington
NAMARA JAG Net	202 889-9214	Navy Judge Advocate General	PCBoard	2400	Wash DC
NARDAC (Allen/McDonald)	202 475-7885	No.Info	PCBoard	2400	Wash DC
NASA HQ ITC (N. Wilson)	202 453-9008	No.Info	Wildcatl	2400	Wash DC
National DataSearch	703 406-0633	Credit, criminal, Land records	Major.BBS	2400	Fairfx/Vienn
National Genealogy BBS #1	703 528-2612	Genealogy Confs FidoNet 109/302	TBBS	2400	Alex/Arling
NAVTASC	301 238-2131	No.Info	RBBS	2400	Clinton
NCJRS	301 738-8895	Nati Criminal Justice Reference Sys	NA	2400	Rockville
NCSA (D. Stang)	202 364-1304	National Computer Security Assoc	RBBS	2400	Wash DC
NCTC (M. Ohde)	202 282-0228	FidoNet 109/125	Opus	2400	Wash DC
NCTCUG #1 (D. Gruenther)	703 820-8969	Capital Tandy Computer Users Group	PCBoard	2400	Alex/Arling
NCTCUG #2 (D. Gruenther)	301 469-8034	Capital Tandy Computer Users Group	PCBoard	2400	Bethesda
Neighborhood Watch BBS	703 256-7516	Neighborhood Watch - Crime Prevent.	RBBS	2400	Fis Ch/McLn
Network 4000 (P. Anderson)	301 292-0559	No.Info	RBBS	9600.HST	Oxon Hill
Network Design (G. Witte)	301 924-5653	Networking - Comm - Education -	PCBoard	9600V.32	Layhill
Network East (H. Hartman)	301 942-5616	38 megs/100+ RelayNet Conferences	PCBoard	2400	Kensington
Next Challenge (Buchsbaum)	703 239-8993	Usenet - Online Game - Unix	NA	2400	Braddock
Niche S/W (M. Raugh)	301 890-9127	Phone-Pro Support Telecomm	WWIV	2400	Layhill
Ninja's Lair (S. Deller)	301 344-0313	No.Info	Rover	2400	Berwyn
No Name (M. & A. Smith)	301 552-2988	No.Info	PCBoard	2400	Berwyn
No Place Like Home (Oberg)	301 596-6450	60s Nostalgia/MENSA/UK/Aust 109/506	NA	2400	Laurel
NOVA (P. Parker)	703 323-2619	FidoNet 109/305	Opus	2400	Fairfx/Vienn
NOVAC (B. Korcel)	703 256-4777	No. Va. Astronomy Club - 109/118	RBBS	2400	Fis Ch/McLn
NumisNet (SM)(L. Mitchell)	301 498-8205	Numismatics-Coins Medals Exonomia	Wildcatl	2400	Laurel
Ole Man River (S. Craig)	301 596-4310	Cajun Recipes Conference	RBBS	2400	Laurel
OLIAN	703 450-1790	Career Services - Job Hunting	NA	2400	Fairfx/Vienn
Omnibus (E. Hayes)	703 799-0668	No.Info	RBBS	2400	Alex/Arling
OrderWire (M. Jordan)	703 450-9693	Telecom Systems Control Association	PCBoard	2400	Fairfx/Vienn
ORL ENcounTers	703 883-5101	Head and Neck Surgery	RBBS	2400	Alex/Arling
OS/2 Shareware (P. Norloff)	703 385-4325	FidoNet 109/347	RBBS	2400	Fairfx/Vienn
Osprey's Nest	301 989-9036	Birding - Nature - Conservation	ROS	2400	Layhill
Packet Press (E. Balkan)	301 294-0756	No.Info	RBBS	2400	Rockville
Panasonic Video	301 738-3858	GSA schedule info on Panasonic Video	Wildcatl	2400	Rockville
PC Assist (D. Litten)	703 264-1826	No.Info	RBBS	2400	Fairfx/Vienn
PC Connection (J. Nieml)	703 356-3813	No.Info	Wildcatl	2400	Fis Ch/McLn
Pc Host (R. Schinnell)	301 949-8848	PC Host author	PC-Host	9600V.32	Kensington
PC Mania (J. Clendering)	703 352-5426	IBM 3090 - Windows - Wordperfect	PCBoard	2400	Fairfx/Vienn
PD - Arlington Police	703 358-3949	Arlington Police Department	TCOMM	2400	Alex/Arling
Pedaler's Palace (Gamlitz)	703 532-3051	Bicycling	GTPower	2400	Fis Ch/McLn
Pegasus (J. Neuenberger)	703 846-1681	06pm-06am	GTPower	9600V.32	Fis Ch/McLn
Penal Colony (D. Newman)	703 591-8228	On-Line Games - Adult Graphics	GTPower	2400	Fairfx/Vienn
Pencil Pusher (J. Peeples)	703 430-5824	No.Info	PCBoard	9600V.32	Hemdon
PGC Lock-Up (M. Guerra)	301 322-2829	PG Co Police	Searchligh	2400	Hyattsville
Pig Pen (S. Balcom)	703 765-6290	Pson Organizer owners only 109/334	Opus	2400	Alex/Arling
Pilot's Lounge (B. Downing)	703 242-3502	Aviation - Adult - Online Games	GTPower	9600V.32	Fairfx/Vienn
Pleasure Palace (B. Dowell)	301 627-4953	Searchlite BBS S/W Sales and Help	Searchligh	9600.HST	Marlboro
PMAS (A. Stalick)	301 770-9045	No.Info	RBBS	2400	Kensington
Port O' Call (Gambrell)	301 924-4590	Onney Md	GTPower	9600.HST	Layhill
Pot'o Gold DEC Rainbow	703 359-6549	FidoNet 109/103	Fido	2400	Fairfx/Vienn
Power Supply (D. Duane)	703 620-2022	Neoteric Intellectuals 109/331	Opus	2400	Fairfx/Vienn
Private Corner (Spottswood)	301 942-5571	No.Info	Wildcatl	2400	Kensington
Productivity Circle	301 445-2873	No.Info	Wildcatl	2400	Silver Spng
Prog Palace (M. Briggs)	703 866-4452	110 megs - RelayNet - Global War	RBBS	9600.HST	Fis Ch/McLn
Programmer's Corner (Smith)	301 596-1180	750 megs of Programming	PC-Connect	9600V.32	Laurel
Programmer's Forum (Davis)	202 966-3647	FidoNet 109/138 - programming	RBBS	2400	Wash DC
Pyramid (JG Dean)	703 912-9878	No.Info	Wildcatl	2400	Fis Ch/McLn
Rainbow Connect (P. Taylor)	703 573-2248	Dungeons and Dragons 109/353	RBBS	2400	Fis Ch/McLn
Random Factor II	703 352-3663	No.Info	QuickBBS	2400	Fairfx/Vienn
RDAMIS (J. Forbes)	703 614-4114	No.Info	Wildcatl	2400	Arlington
Real Estate (L. McGoldrick)	301 384-9302	Real Estate and Financial Files	RBBS	2400	Layhill
Real Life	301 474-2656	No.Info	TBBS	1200	Berwyn
Reality Check (J. Cady)	703 671-8536	UFO and related subject matter	WWIV	2400.MNP	Alex/Arling
Realm of Lost Souls	301 552-9463	No.Info	PCBoard	9600.HST	Berwyn
RED-LINE STATION#1 (M. Lee)	301 869-5231	30 doors - 60 conferences	GTPower	2400	Galtersburg
REMDEM OnLine (B. Mason)	703 503-9410	MS-DOS-Amiga-C64/128-WAC Newsletter	PCBoard	2400	Spcl Service
Robin's Nest (R. Turner)	301 568-1879	Navy Recruiting	Wildcatl	2400	Cap Heights
Running Board (B. Anthony)	301 229-5342	Multi Node - 80 conferences	PCBoard	9600V.32	Bethesda
S3-Tech (B. Hampton)	703 451-9509	File Sharing and Help for New Users	RBBS	9600V.32	Fis Ch/McLn
SALEMDUG (R. Renner)	202 646-2887	State and Local Emergency Mgt	PCBoard	9600.HST	Wash DC
Sanctuary	703 459-0920	novuchitas	NA	2400	Woodstock
Sara's Outpost\$ (M. Shoupe)	703 358-9112	Born Again Christian-HAM 109/306	Opus	2400	Alex/Arling
SCA Connection	703 569-3137	Adult Conf/Computer Classifieds	RBBS	2400	Fis Ch/McLn

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Science Line#1 (A. Mondale)	202 328-5853	Nat'l Science Teachers Assoc. -	RBBS	2400.MNP	Wash DC
Scorpio Rising II	703 620-2827	Gaming - Poetry - Comics 109/303	Opus	2400	Fairfax/Vienn
Scotland the Brave	703 768-8637	Scottish/American Events/Interests	PCBoard	9600Fast	Alex/Arling
Sentry Net	703 815-3244	FidoNet 109/229	Remote.Acc	2400	Braddock
ShanErin (D. Page)	703 941-8291	60 echo'd conferences 109/104	Opus	9600.HST	Fis Ch/McLn
Shibboleth (T. Grall)	703 461-7627	Matchmaker Door and 25 others	Splitfire	2400	Alex/Arling
Silent Service	202 574-8423	No.Info	PCBoard	9600.HST	Wash DC
Silver Bullet (F. Mallory)	301 622-2247	Mercedes-Benz Conf - FidoNet 109/417	Opus	9600.HST	Silver Sprmg
Silver Spring Exchange #1	301 989-0190	Adult-Chat-E-mail-Online Games	Oracomm	2400	Layhill
Silver Streak#1 (B. Blase)	301 587-3142	207meg files - online games -	Searchligh	2400.MNP	Silver Sprmg
Soft Sale (G. Hendershot)	703 569-6876	1.2 GB Files	Major.BBS	2400	Fis Ch/McLn
SOFTEXT (J. MacDonald)	202 625-7746	askSAM - Graphics Programs -	RBBS	2400	Wash DC
SoftROX	703 280-4233	Super VGS GIF's and Animations	Wildcat!	9600.HST	Fairfax/Vienn
Split Infinity	703 841-1859	11pm-7pm Mon-Fri / 24 hrs Sat	WWIV	2400	Alex/Arling
Split Personality (D. Noll)	703 922-9780	ProMAC - MAC and IBM Interests	RBBS	2400	Alex/Arling
SPPT (D. Shore)	202 663-9395	No.Info	RBBS	2400	Wash DC
Sprocket's	703 765-1305	Amiga and IBM	WWIV	2400	Alex/Arling
SRS	202 634-1764	National Science Foundation	RBBS	2400	Wash DC
StarQuest II	301 864-3748	No.Info	Rover	2400	Hyattsville
StarShip	703 522-9568	No.Info	WWIV	2400	Alex/Arling
State Data Center	301 763-1568	Census Bureau Economic Statistics	RBBS	2400	Cap Heights
Steps Of DC (R. Ward)	202 659-5270	12-Step Programs FidoNet 109/133	Fido	1200	Wash DC
Street Noise (B. Marusich)	301 601-8710	1.4 Gigs of Adult File Space	RBBS	9600V.32	Rockville
Sugarland (M. Schroebel)	301 340-8519	No.Info	Quartet	2400	Rockville
Sure Shot	301 870-8729	In Waldorf MD	Searchligh	2400	Oxon Hill
Swap Shop (R. Siddiqui)	703 385-3114	40 conversation oriented confs	RBBS	2400	Fairfax/Vienn
Synapse (H. Hurrell)	202 543-9176	Disabled 109/110	Fido	2400	Wash DC
Synergy (M. Prado)	703 742-6150	Synergy Hypertext - FidoNet 109/349	Remote.Acc	2400	Fairfax/Vienn
System Exchange (Andrus)	703 323-7654	FidoNet 109/301 under OS-2 I	Maximus	9600.HST	Fairfax/Vienn
Tackless \$ (G. Huggins)	703 764-9735	PC-SIG disks - FidoNet 109/344	TCOMM	9600.HST	Alex/Arling
Tan-D-Link (G. Moyer)	301 946-6056	Pandy Computers - Home Electronics	Major.BBS	1200	Kensington
Tax Assistance (R. Stanley)	703 237-8430	run by Tax Accountant	PCBoard	2400	Fis Ch/McLn
Tech Connect (T. Reardon)	703 551-0002	No.Info	PCBoard	9600V.32	Lorton
TechMail (B. Hardin)	703 430-2535	AutoCAD - Turbo Pascal Confs	RBBS	2400	Hemdon
TechNet at TJHSST	703 941-3572	Thomas Jefferson Science/Tech HS	PCBoard	9600Fast	Fis Ch/McLn
TechWorld	202 682-5356	multi node	PCBoard	9600	Wash DC
Teddy Bear ACOA (R. Walsh)	703 821-2925	Recovery	RBBS	2400	Fis Ch/McLn
TEDI-Net (R. Mays)	703 759-2424	Hearing Impaired	Searchligh	2400	Fis Ch/McLn
The HUB #1 (I. Towers)	703 685-0019	Leading Edge Conference - 40 Games	PCBoard	9600.HST	Alex/Arling
The Huge One's (J. Brose)	301 871-8739	No.Info	Opus	2400	Kensington
The Mental Hospital	703 222-0180	FidoNet 109/336-Surrealism- Games	Fido	2400	Falls Church
The Online (K. Strauchs)	703 759-5321	Online Games	PCBoard	2400	Fis Ch/McLn
THE PINNACLE! \$ (Cummings)	703 471-7111	FidoNet 109/321	TBBS	2400	Fairfax/Vienn
Thieves Guild	301 894-8516	Atari 800 and ST too	FOREM-ST	9600.HST	Oxon Hill
Tick Data \$	703 866-0384	Download Files of Market Data	Fido	2400	Fis Ch/McLn
TIDMADT (D. Aronson)	703 370-7054	FidoNet 109/120	Opus	9600V.32	Alex/Arling
Topgun (S. Potter)	703 551-0308	No.Info	RBBS	9600.HST	Lorton
Track Stats	703 938-4705	Horse Racing Statistics	NA	2400	Fairfax/Vienn
Trolls n Tribulations	703 263-0827	No.Info	Opus	2400	Hemdon
Tropical Paradise (D.Knoch)	703 643-0256	No.Info	PCBoard	2400	Lorton Metro
Turner Technologies	703 242-8129	Lotus 1-2-3 Windows Hayes Telix	PCBoard	9600.HST	Fairfax/Vienn
Twilight Clone - MAC \$	301 946-8677	Macintosh BBS with MAC BBS List	RBBS	9600.HST	Kensington
U.S. Naval Observatory	202 653-1079	Time - Date - Sunrise - Sunset	RBBS	1200	Washington
Ultima the BBS (W. Herrin)	703 941-5662	Infocom Games Online	Searchligh	2400	Fis Ch/McLn
USA-GDR DataBank (A. Lang)	202 529-0140	Unified Germany-Arms Control	TCOMM	9600.HST	Wash DC
USNO Time of Day Clock	202 653-0351	Atomic Clock Time Mark Service	?	1200	Washington
VA Connection #1 (McClenny)	703 648-1841	5 Nodes/1.9 gigs/Games/217 Confs	PCBoard	9600.HST	Fairfax/Vienn
VA Connection\$#2 (McClenny)	703 648-0250	No.Info	PCBoard	9600.HST	Fairfax/Vienn
VF #1 (L. Olsen)	202 686-3845	Bethesda Clone Builder - Retailer	PCBoard	9600V.32	Wash DC
VideoPro (T. Hackett)	703 455-1873	Video Photography/Production/TV	PCBoard	2400	Engleside
Violent Playground	703 281-2876	No.Info	NA	2400	Fairfax/Vienn
Virginia Genealogical	703 323-5630	Geneology Research Service Available	RBBS	2400	Fairfax/Vienn
WAFRUG (M. Saunders)	202 244-3042	Revelation Data Base S/W Users Group	PCBoard	2400	Wash DC
Wake's Watering Hole	301 982-2340	FidoNet 109/525	QuickBBS	1200	Berwyn
Waldorf #1 (J. Sartori)	301 843-1548	No.Info	PCBoard	96Microc	Oxon Hill
Wang Users Group (J. Cook)	703 534-3146	Wang Computer Topics/Users	Fido	1200	Fis Ch/McLn
Wash ZEPHYR (M. Hoover)	703 620-5418	Vietnam & CPM Conferences 109/124	TCOMM	9600.HST	Fairfax/Vienn
Wasteland (B. Levy)	301 864-1132	No.Info	RBBS	2400	Hyattsville
WBS Assoc	703 941-9436	No.Info	HC	2400	Fis Ch/McLn
Weird Science	703 671-5892	Adult - On-Line Games - Free Access	Wildcat!	2400	Alex/Arling
Welcome Home (G. Williams)	301 627-4787	BiModem Test Site	Wildcat!	2400	Marlboro
Weyr	703 385-9397	No.Info	QuickBBS	2400	Fairfax/Vienn
When Gravity Falls (Berlin)	202 686-9086	AWK Programming Sub-Board	Searchligh	2400.MNP	Wash DC
White Knight Cafe (T.Frost)	301 946-0674	FidoNet 109/409	Opus	2400	Kensington
Willspice (V. Williams)	703 781-3861	No.Info	Wildcat!	2400	Engleside
Winging It	301 340-3207	Eagle-Televideo-Columbia- Orphans	TPBoard	2400	Rockville
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Wizard's Workshop #1	301 322-8678	20 conferences	Rover	2400	Hyattsville
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WRUG (M. McCauley)	301 460-7980	Rbase Users Group BBS	PCBoard	2400	Kensington
Your Place #1 (K. Goosens)	703 978-6360	RBBS Author/Maintainer - Multi Node	RBBS	96Microc	Fairfax/Vienn
ZED-88 BBS (G. Lindsay)	703 968-9438	Cambridge Z88 laptop - HAM	PCBoard	2400.MNP	Centerville
Zen Den (M. Porter)	301 868-1921	Games and Adult Files	Wildcat!	9600.HST	Clinton
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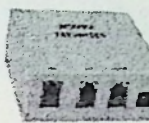
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NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - DECEMBER 1990

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ADA 9X Project Bulletin Board	(800)232-9925	ADA Programming Language Revisions and News	Chris Anderson/Susan Carlson	Eglin AFB, FL
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ANARC BBS	(913)345-1978	World Radio/TV Handbook - Short Wave Freq Lists/Scheds.	Assoc. of North American Radio Clubs	KS
Applied Modeling Research RBBS	(919)541-1325	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills, NC
Aquila BBS	(708)820-8344	2 GB 9 Nodes Fidonet/Interlink/Meironet MCE IL/CHI	Kevin Behrens/Steve Williams/Chris Babb	Aurora, IL
Ashton-Tate Technical Support	(213)324-2188	dBase and Multimate Support - CIS HOST NAME:ATBBS	Ashton-Tate Corporation	Torrance, CA
AST Technical Services BBS	(714)727-4723	Supert support system for AST Computer Products	AST Research Inc.	Irvine, CA
AT&T Support BBS	(201)769-6397	Support for PC 6300 and Other AT&T PC Models	American Telephone/Telegraph PC Division	Plainfield, NJ
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BellSouth's TUG Gateway	(404)594-3964	Transext Universal Gateway - Atlanta Journal-Constitution	BellSouth	Atlanta, GA
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Big Sky Telegraph	(406)683-7680	Education/Econ Development Info to Montana rural Communities	Montanna Rural Education Network	Dillon, MT
Bit Bucket Software BBS 104/501	(303)693-4317	Home of Binkley/Term Mail Software	Bob Hartman	Aurora, CO
BMUG BBS	(415)849-2684	Support for Macintosh owners - files - conferences.	Berkeley Macintosh Users Group	Berkeley, CA
Book BBS	(215)657-8130	Information on 2000 Computer Books - 800 order number	Business & Computer Book Store	Willow Grove, PA
Brown Bag Software BBS	(408)371-7654	Power Menu/ PC Outline Software Support	Brown Bag Software	Campbell, CA
Bruce's Bar & Grill	(203)236-3761	24-line Social System - Chat - Games - Downloads	Bruce Lomasky	West Hartford, CT
BurtonWare BBS	(208)454-2629	PC-File dB / PC-Calc / PC-Type Software Support	Jim Burton/BurtonWare	Bellevue, WA
C.A.R.L Library Service	(303)863-1350	Citations to 2 Million Texts in Colorado Library System FREE	Colorado Alliance of Research Libraries	Denver, CO
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Corporate Data Exchange (CDX)	(609)683-4422	PR Newswire/ Business Wire. Logon: hello user.cdx	Digital Communications Associates	Roswell, GA
Crosstalk Communications BBS	(404)740-8428	Product Support for Crosstalk for Windows/MK4/XYI	Career Technologies Corporation	Andover, MA
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Federal Job Information Center	(313)226-4423	Federal Job Opportunity Lists available online	US Office of Personnel Management	Detroit, MI
FEDLINK ALIX II	(202)707-9658	Info on Federal Libraries - Excerpts Library of Congress News	Federal Library Information Network	Washington, D.C.
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JOBBS	(404)992-8937	Online Job Listings - 2186 Technical Pos. - 10,000 Corps.	Jim Burt	Boulder, CO
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LUMINA	(612)626-2206	Libraries of Univ. of Minnesota Integrated Net Access 7E1VT100		
Maxi-Micro TickerScreen	(212)809-1160	2000 Closing Stock Quotes/Market Research/Order Entry		
McAtee Associates BBS	(408)988-4004	Computer Virus Information - VIRUSCAN and CLEANUP Programs		

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NATIONAL LIST OF ELECTRONIC BULLETIN BOARD SYSTEMS AND ON-LINE INFORMATION SERVICES - DECEMBER 1990

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Micro Message Service	(919)779-6674	USA Today/Boxoffice Magazine - Large Download Area	Mike Stroud	Raleigh, NC
Microlink B	(303)972-9600	1 Gigabyte of IBM Software - Multiline - USA Today News	Gilard Westerberg	Littleton, CO
Microform Technical Support BBS	(206)881-8119	Support for Popular R:Base Relational Data Base System	Microform Corporation	Redmond, WA
Microsoft Product Support BBS	(206)846-9145	Word/Works/Multiplan/Flight Simulator Application Notes	Microsoft Corp/Scott J. Honaker	Bellevue, WA
Minnesota SpaceNet	(612)920-5566	Minnesota Space Frontier Society - NASA News	Ben Husset	Minneapolis, MN
onu-CAD BBS	(607)264-3307	CAD Designs for Tombstones, Monuments, and Memorials	Jim Falkeno/Monumental Computer App.	Cherry Valley, NY
MusNet	(301)946-6798	CD Catalog, Music News, Music Files, Top 40 Listings	Mike James - Multimedia Software	Mount Airy, MD
NARDAC BBS	(804)445-1627	Zenith Computer Support - List of Federal Micro User Groups	Navy Regional Data Automation Center	NAS Norfolk, VA
NASA Headquarters Info Tech	(202)453-9008	Shareware and Technical Info for NASA PC users.	National Aeronautical and Space Admin.	Washington, DC
NASA SpaceLink	(205)895-0028	NASA Educational Affairs Div. - Flight Data/Space History	Marshall Space Flight Center	Huntsville, AL
Nashville Exchange	(615)383-0727	8 line TBBS - Games/TBBS Software Development	Ben Cunningham	Nashville, TN
National Agricultural Library	(301)344-8510	Agricultural Info/Research Resources	US Department of Agriculture	Beltsville, MD
National Genealogical BBS	(703)528-2612	Family History - Genealogical Research - Gravestone Haunting	National Genealogical Society	Arlington, VA
National Inst. Science Technology	(301)948-5717	Micro Elect. Info Exchange - Virus Protection/Security Issues	National Inst. of Science and Technology	Gaithersburg, MD
National Publishers Exchange	(813)989-1087	Headquarters for NPE Newsletter - Desktop Publishing	Ed Aborn	Tampa, FL
Nautilus BBS	(316)365-7631	32 Line TBBS with 5 GB of Files on 80486. CD/WORMS	Nautilus Communications	Iola, KS
NAVWESA	(202)433-6639	Naval Weapons Engineering Support	Dept. of Navy / Bill Walsh	Washington, D.C.
Network World Bulletin Board	(508)620-1178	LAN and WAN Issues and Technology	Network World Magazine/CW Communications	Framingham, MA
Neuropsychology Bound 157/3	(216)356-1431	Support Groups for Disabled/Physically Impaired	Butch Walker	Rocky River, OH
NIST ACTS	(303)494-4775	Automated Computer Telephone Service - Sync PC to NBS Time	Nat. Institute for Standards/Technology	Boulder, CO
NOAA Space Environment Lab	(303)497-5042	Solar Flare/Geomagnetic Data Online	National Oceanographic/Atmospheric Admin.	Boulder, CO
NoGate Consulting	(616)455-5179	Home of PAK archive utility	Mike Neuhaus Gus Smedstad	Grand Rapids, MI
Numisnet	(301)498-8205	Collecting of Coins, Medals, and Exonumia	The Mitchell Group	Laurel, MD
OASIS BBS	(404)627-2662	Home of Atlanta Bulletin Board List - ABEL	Robert Orr/Online Atlanta Society	Decatur, GA
Odyssey	(818)358-6968	Adult Multiline Chat System - Games - Magazines - Downloads	Michael Allen	Monrovia, CA
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	US Department of Education	Washington, D.C.
Old Colorado City Communications	(719)632-4111	Political Discussions - Unix UUCP Public Access - Multiline	Dave Hughes	Colorado Springs, CO
Online Computer Bookstore	(408)744-0514	Online Database/Orders for Computer Book Titles	Austin Murphy & Associates Book Store	Sunnyvale, CA
Online Now	(807)345-5522	5 CD-ROMS plus 3MB New Software per Week	Gary Walsh/Tom Haavisto	Thunder Bay, Ontario
Online Sports	(716)688-6537	Large base of Sports Stats for Pro Gamblers	Terry McCraith	Williamsville, NY
Online With Hayes	(404)446-6336	Hayes Public Bulletin Board - Conferences/SIGS/Support	Hayes Microcomputer Products	Norcross, GA
Oracle PC	6108 260-6222	South Australian TBBS Multiline System	Don Crago	Pooraka South Australia
Osprey's Nest	(301)989-9036	Birdwatching, Bird feeding, Naturalist/Ecology Issues	Fran and Norm Saunders	Colesville, MD
P.D.S.L.O. BBS	(516)938-6722	Home of THE LIST National BBS List	James Toro	Hicksville, NY
PacComm BBS	(813)874-3078	Packet Radio Equipment Supplier - TNC/PSK Modems	Gwyn Reedy/PacCom Inc.	Tampa, FL
PC-Link Central	(216)381-3320	Shareware library with 100% USR HST access - 5 years up	Norm Henke	Cleveland, OH
PDSLO BBS	(812)855-7252	University PCBoard System. Home of A88/D86 Assembly Lang.	Indiana University/Eric Isaacson	Bloomington, IN
PHYSICS Forum BBS	(516)938-6722	Home of THELIST - Listing of 3000 Nationwide BBS Systems	Jim Toro	Hicksville, NY
Physicists and Astronomical Sciences	(413)545-1959	Physics and Astronomical Sciences	Univ. of Mass. Dept. of Physics/Astronomy	Amherst, MA
Pinecliff BBS 104/28	(303)642-7463	Large Shareware Library/Echomail Conferences since 1985	Craig Baker	Pinecliffe, CO
PKWare BBS	(414)352-7176	Home of PKZIP 1.10 Compression Utility	Phil Katz/PKWare Incorporated	Glendale, WI
Pleasure Dome	(804)490-5878	Sexually Explicit Fantasy Chat System - Adults only	Tom Terrific	Tidewater, VA
Popular Mechanics Online BBS	(212)582-8369	Automotive, Home/Shop, Electronics/Photography, Science	Popular Mechanics Magazine	New York, NY
ProComm Support BBS	(314)474-8477	Home of ProComm 2.4.3 and ProComm Plus Comm Prgrms	Thomas Smith/DataStorm Technologies Inc.	Columbia, MO
Public Brand Software BBS	(317)856-2087	Commercial Shareware Vendor	Public Brand Software	Indianapolis, IN
Radio Electronics BBS	(516)293-2283	Radio Electronics Magazine Online Adjunct	Gernsback Publications	Farmingdale, NY
			Janice Stevens	Portland, OR

Random Access Information Svc.	(503)761-8100	10500 IBM/MAC/AMIGA Files - 3000 MaxiPic Graphics	Ronald Spencer - RGB Computing	Guelph, Ontario
RGB Computing	(519)824-3997	Multiline Information Service/PC Sales/Large File Selection.	Vic Kass	Willowdale, Ontario
Rose Media	(416)733-2780	Excellent Canadian PC Board System-Publications/Conferences	Rusty and Edwina Hardenburgh	Boardman, OH
Rusty & Edles	(216)726-0737	Large ML PCBoard run by Husband and Wife - NFL/Tradewars	Clark Development Company/David Terry	Murray, UT
Salt Air BBS	(801)261-8976	Home of PCBoard BBS Software - National List of PCB Sys	National Science Foundation	Washington, D.C.
Science Resource Studies BBS	(202)634-1764	Federal R&D Budget - Technical Labor Market Statistics	Brian Moldover	Willow Grove, PA
Scouters Scientific Exchange	(215)657-5586	Biotechnology/Chemistry/Physics/Astronomy/Space Sciences	System Enhancement Associates	Wayne, NJ
SEABOARD	(201)473-1991	Support system for ARC, SEADOG, and AXE software.	Seagate/Shelley Tolch	Scotts Valley, CA
Seagate Technical Support BBS	(408)438-8771	Installation and Specifications for Hard Drive Models	Sammy Mitchell/SemWare Software Products	Marletta, GA
SemWare Support BBS	(404)641-8988	Home of QEdit - A Superb Shareware Text Editor	Allan Applegate	Denver, CO
Short Line 104/96	(303)778-7312	Varied Subjects, Fidonet, BinkleyTerm	Tecnologia Uno Cero S.A. de C.V.	Mexico City
Sistema Profesional Informacion	525 590-5988	Largest BBS in Mexico - Spanish Language TBBS	Society for Technical Communication	Washington, D.C.
Society for Technical Comm. BBS	(703)522-3299	STC Job Service, Freelance Registry - Technical Writers	Anton Johnson	Fremont, CA
Sonshine Express BBS	(408)946-7382	Family Oriented Christian BBS	Roy Timberman	Gladstone, MO
Sound Advice BBS	(816)436-4516	Twenty Line PCBoard with 2 Gigabytes Storage - HST Modems	Federal Emergency Management Agency	Washington, D.C.
State and Local Emergency Mgmt.	(202)646-2887	Hazardous Materials/National Dam Watch/Emergency Info	Colby Jordan (BBS) Peter Arvin (list)	Orland Park, IL
Stillwaters BBS	(708)403-2828	Home of Stillwaters Chicagoland BBS List - over 500 systems	Dave Klidder	Scottsdale, AZ
Take 3 BBS	(602)482-1001	Reviews of Movies/Videos/ Film Industry Job Clearinghouse	Gary Clarkson	North Hollywood, CA
Talk Channel	(818)506-0620	DLX-Based Multiline Chat/Talk Service - Sexual Orientation	Clinton Herbarium, Buffalo Museum	Buffalo, NY
TAXACOM	(718)896-7581	Botany, Herbaria, FLORA ONLINE Newsletter, Latin Translation	BIOSIS Carol Lock/Kelth Pittman	Philadelphia, PA
Taxonomic Reference File	(215)972-6759	Online Bacterial Name Database - ORACLE Door	Phil Becker/eSoft Inc.	Aurora, CO
TBBS Net 104/23	(303)699-9248	Home of The Bread Board System (TBBS) BBS Software	Chuck Forsberg/Omen Technology Incorp.	Portland, OR
Telegodzilla	(503)621-3748	Home of ZModem File Transfer Protocol/YModem/YAM	Collin Sampaleanu/Exis Incorporated	West Hill, Ontario
Telx Support BBS	(416)439-8293	Support Service for Telix Communications Software	Austin, TX
Texas State Law Library BBS	(512)463-1371	Online Legal Periodicals and Citation Database	Ryugen Fisher/The Old Frog	Rhineland, WI
That Old Frog's Swamp	(715)862-3895	Zen Buddhist Monk/PC Consultant	Artie Kohn	Richmond Hill, NY
The Back Room	(718)649-1614	America's Largest Exclusively Gay DB - Home of Gaycomm	Jim Appleby	Los Angeles, CA
The Business BBS	(213)477-0408	Microsoft Windows Support	Joseph Sheppard	Tulunga, CA
The Ledge PCBoard	(818)352-3620	Home of Textview Door for PCBoard Systems	Richard Paquette	Mt. Laurel, NJ
The LiveWire BBS	(609)866-2551	Online Magazine Subscription Orders/BBS Callers Digest	George Peace	Harrisburg, PA
The Other BBS 1:1/0	(717)657-2223	Fidonet Zone Coordinator for North America 1:1/0	Bob Voorhees	Littleton, CO
The Professional System	(303)740-2223	Writers, Lawyers, EDP Auditors	Whole Earth Electronic Link	Sausalito, CA
The Well	(415)932-7190	Unix Conferencing System - \$8 monthly plus \$3 hourly	Chipsoft Inc.	San Diego, CA
TurboTax Support BBS	(619)453-5232	Income tax Information - Turbotax 1040 program support	U.S. Robotics Corporation	Skokie, IL
U.S. Robotics - Sir UBU Sit	(708)982-5092	Support for US Robotics HST 9600 bps Modems	Dr. James Waldron	Glen Ridge, NJ
Uniflex Communications BBS	(201)678-1367	United Nations Press Releases - Uniflex News	US Department of Commerce US Naval Obser	Washington, D.C.
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UT Library Online Catalog	(512)471-9420	Xmfts ASCII Time String - Sync Your PC to USNO Atomic Clock	University of Texas at Austin	Austin, TX
VA Property Listing BBS	(602)840-2371	Online Library Card Catalog Listing 3.5 million entries	Veterans Admin - Phoenix Regional Office	Phoenix, AZ
Vacation Florida Database	(407)839-0333	List of VA held property foreclosures	Richard and Barbara Kenney	Orlando, FL
Ward and Randy's CBBS	(312)545-8086	Florida Tourism Information/Database of Campsites/Hotels	Ward Christensen/Randy Sues	Chicago, IL
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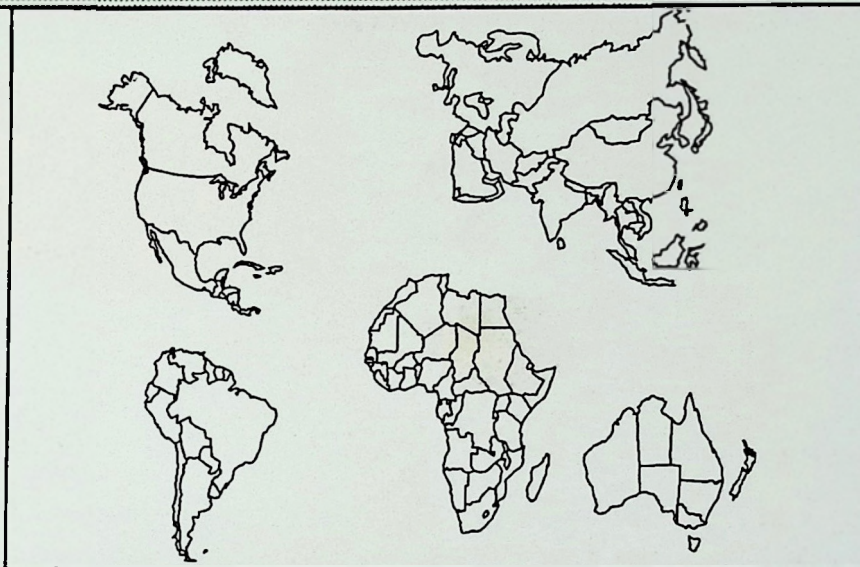
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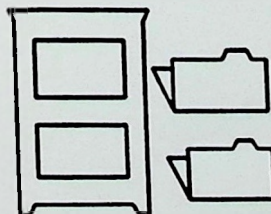
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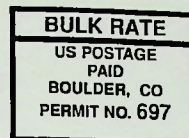


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